

**AN INVESTIGATION OF THE FACTORS THAT INFLUENCE  
PARTICIPATION IN MAMMOGRAPHY SCREENING IN  
GREECE**

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## ABSTRACT

This thesis examines and explores women's mammography screening experiences and the factors influencing women's screening behaviours and choices. The sample consisted of Greek women who were recruited from women's organizations in Athens. 189 women completed a survey questionnaire about their values and beliefs in relation to mammography screening, 33 of whom subsequently underwent an in-depth interview to explore their experiences of mammography screening and their decision-making processes. According to the findings, women's mammography screening behaviour depended to a great extent on the quality and nature of their interactions within their social networks. Thus, the quality of information and meanings derived from these interactions was what determined women's behaviour. Family, close friends and doctors appeared to be important in the formation of women's beliefs, perceptions, emotions (fear of cancer) and behaviour in relation to breast screening. Interestingly, fear of cancer had an opposing effect towards their screening behaviour. A tentative model is presented, which attempts to explain the way these influences affect beliefs, perceptions and mammography screening behaviour, using elements of existing behavioural models. Further exploration of the influential factors and associations identified in this study is required.

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## TRANSCRIPT CODES

Italics are used for taped recorded interview material.

Each interviewee was assigned a reference code. 1, 2, 3, 4 ...

All transcriptions are *ad verbatim* from recorded materials.

Words in square brackets [ ] include additional information to make the context and/or meaning clear.

... indicates words, phrases or sentences of the extract omitted.

Data have been edited to preserve respondents' anonymity.

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## **CHAPTER 1 - Introduction**



## **1.1 Introduction**

Breast cancer is the third largest cause of cancer deaths in Europe (Ferlay et al., 2007). Interestingly though, despite the general decrease of mortality rates in the rest of Europe, in Greece mortality rates due to breast cancer are still high (Mauri et al., 2009). In Greece, the incidence of breast cancer is one in twelve women, and a new case of breast cancer is diagnosed every 2.5 hours, while every 6 hours a woman dies from this disease (Tzempelikou, 2005). Therefore, breast cancer is perceived as one of the worst and most life-threatening diseases for the Greek female population (Tzempelikou, 2005).

A variety of screening procedures of varying effectiveness are available for the early detection of breast cancer (McCaul and Tulloch, 1999). For women with an average risk there are three methods of breast screening: Breast Self-Examination (BSE), Clinical Breast Examination (CBE) and mammography screening (Clarke and Savage, 1999). Among these, mammography screening has been established as the most effective in detecting cancer (Hoffken, 2001). Therefore, women have the chance to take advantage of such procedures in order to detect breast cancer at an early stage. However, it would appear that some women in Greece abstain from breast screening on a regular basis and in particular from mammography screening. Only 5% of women screened in Greece are being diagnosed at an early stage of breast cancer (Keramopoulos et al., 2005).

Therefore, the factors that influence women's mammography screening behaviour is an important issue to be uncovered, in order to facilitate the understanding of such a behaviour. This thesis sets out to investigate the factors that influence participation in mammography screening in Greece. Such an investigation aims to raise the awareness of health care providers of the factors that influence Greek women's behaviour. In addition it is important to highlight the nurse's role in providing information on breast cancer and in promoting early examination for the detection of the condition. The focus of this project was influenced by my personal experience and observations as a nurse in a Greek public breast cancer clinic, as well as the unacceptably high breast cancer incidences and mortality rate in Greece.

This thesis firstly outlines the context in which Greek women form their views and behaviour towards mammography screening. In particular, the Greek health care system, breast cancer incidences and mortality rates are outlined. Secondly, the debate on the efficacy of mammography screening is presented and critiqued. The possible benefits and harmful effects of performing mammography screening are explored and analyzed. Detailed reference is then made to the theoretical, empirical and practical concerns relating to women's behaviour regarding utilization of mammography screening. Subsequently, the theoretical framework of this study in relation to screening-health behaviour and particularly to mammography screening is outlined. The aim and objectives of this study are clarified, developed from the analysis and critique of the existing literature review. This is followed by the justification and presentation of the philosophical and methodological approaches under which this study was conducted. Justification of the selected methods used in this research study and description of the data collection and analysis procedure is also made. Finally, the findings revealed from the analysed data are illustrated, followed by discussion of the main themes that were revealed by this work.

## 1.2 Definitions

For the purpose of this research study, breast cancer, screening tests and particularly mammography screening, women's perceptions, and health behaviour are defined below.

### *Breast cancer*

Breast cancer is the most common malignancy in women worldwide (Bange et al., 2001; Yardley, 2000). It can be defined as any malignant tissue growth in the region of the breast, developed from cells of the breast. Phelps (1999) proposed that the origin of these abnormal cells classifies the cancer, and can be any type of cell in the body. Masses of rapidly dividing cells, generally referred to as tumours (lumps), can be of infinite shape and size variation. A breast tumour that is malignant can spread to other tissues of the body and can be life-threatening; the process of which is called metastasis (Teasdale, 1999). Long-term survival is more likely if the cancer remains localized (Bange et al., 2001).

### *Screening tests – mammography screening*

Screening tests are performed to detect illnesses at a time when intervention may be expected to affect patient outcomes (Hoffken, 2001). Mammography screening can be defined as an X-ray early detecting test that can detect tumours years before they are clinically palpable, at a time when less extensive therapeutic interventions may be required (Kimberly and Hogan, 2003).

### *Perception*

In this study of Greek women's perceptions of mammography screening utilization and breast cancer, perception is defined as the processes that can provide coherence and unity to sensory input (Reber and Reber, 2001). In particular, perception is the assemblage of the sequence of events from the presentation of a physical stimulus to the phenomenological experiencing of it. In other words, perception can be defined as the synthesis of the various elements people sense and subsequently incorporate into their supporting beliefs (Reber and Reber, 2001).

### *Health behaviour*

Health behaviour has been defined in various ways, including any activity undertaken for the purpose of preventing or detecting disease or for improving health and well being (Conner and Norman, 1996), or as: behaviour patterns, actions and habits that relate to health maintenance, to health restoration and health improvement” (Gochman D.S., 1997, p. 3).

Additionally, health behaviours impact upon individuals’ quality of life, by delaying the onset of chronic disease and thereby extending active lifespan (Conner, 2002). In this research study, I am defining and interpreting Greek women’s actions in relation to the adoption of mammography screening as a ‘health behaviour’.

## **CHAPTER 2 - Literature Review**

## **2. 1 Introduction**

In order to develop the literature review associated with the research topic, various sources were used. Electronic databases such as the CINAHL, MEDLINE, EMBASE, OVID, PsycINFO, British Nursing Index (BNI), the Greek Nurses Association, the Senologic Hellenic Society, Introtek on-line, the Greek Medical Network, the National Greek Documentation Centre and Google Scholar were used in order to search and detect useful articles, relevant to this research subject. The key words, identified through an interpretive process, were entered into the above electronic databases. These were a result of the researcher's personal clinical experience, reading of the literature and discussions with supervisors. The key words also arose as a result of consideration of the research questions and the themes the researcher was interested in. A sample of these key words are 'cancer', 'breast cancer', 'female breast', 'tumour', 'mammography screening', 'detection of breast cancer', 'malignant tumour', 'psychological factors and mammography screening', 'decision making', 'age screening', 'mammography efficacy', 'mammography debate', 'Greek culture', 'Greece', 'nursing education', 'advanced nursing practice', 'behaviour', 'behaviour model/theory'. Relevant English and Greek books and newspapers were also used for selecting additional information associated with this study.

This chapter presents a critical review of the literature relevant to the development of this study. To begin with, the Greek context in relation to the Health Care System (HCS), the Primary Health System (PHS), breast cancer and screening is presented and examined. This aims to provide the reader with the necessary information in relation to the health care system Greek women engage with, its gaps and shortcomings, and the access it provides to women who want to get screened. Such information aims to reveal the issues and concerns that justify the study. The importance of mammography screening is emphasized along with the debates and possible side-effects associated with its efficacy. The possible factors identified in previous studies that may influence screening behaviour are presented and critiqued with an emphasis on the individual, their needs, background, beliefs, perceptions and behaviour in relation to breast screening. In addition, the justification of the theoretical framework adopted for the study is presented, through a critique of the existing health

behaviour models. Finally, conclusions and further discussion associated with the literature review is illustrated, in order to highlight the importance of the work.

## **2. 2 Background – Current Debates**

### **2. 2.1 Background: The Greek Context**

The Greek background in relation to breast cancer, the health and primary health care system and mammography screening are presented and analyzed below.

#### **2.2.1.1 Frequency of breast cancer in Greece**

Breast cancer is a threat to the female population on a global scale. It comprises 29% of all cancer incidences (Ioannidou-Mousaka, 2006; Linos, 2005). Linos (2005) stated that the likelihood of developing breast cancer increases with age and when there is a family history of breast cancer. According to Boyle and Ferlay (2005), out of the 370,100 cases of breast cancer in Europe in 2004, approximately 129,900 women died. In 2006, there were 429,000 breast cancer incidences, making it the most common form of cancer in Europe (28.9% of total), from which there were 131,000 deaths (Ferlay et al., 2007).

Data on breast cancer incidences and mortality rates that pertain to Greece are neither complete, nor analytical (Levi et al., 2007; Athens News Agency, 2006). It is reported that Greece is the only member state of the European Union that does not have a detailed record of breast cancer incidences on a national level (Keramopoulos et al., 2005). The only statistics available were compiled by the National Record of Breast Cancer Incidences fourteen years ago (Keramopoulos et al., 2005). In addition, there is no record of the exact number of women who undergo periodical mammography checks (Keramopoulos et al., 2005). Therefore, the statistical evidence that exists is sourced from a number of specific studies in major oncology centres and breast clinics in Greece. These are mainly situated in the capital, Athens, where 34% of the total Greek population is located, and in a few other urban areas (Keramopoulos et al., 2005). It is apparent that notwithstanding the existence of such statistical data, there is a need for systematic and thorough records concerning the incidence of breast cancer in Greece (Papadopoulos, 2006).

According to the statistical data provided by the major oncology and breast clinics in Greece, the frequency and mortality rate of this disease presents great cause for concern (Giannarou, 2005). Dr. Markopoulos, President of the Hellenic Breast



Surgery Society, noted that in Greece over 4,000 women develop breast cancer on an annual basis (Giannarou, 2005). Between 1,500 and 1,800 Greek women die from breast cancer every year (Ioannidou-Mousaka, 2005), presenting the second-highest cause of death after road accidents (Papastefanou, 2004). In addition, in recent years Greek women have been developing breast cancer at an increasingly young age (Ioannidou-Mousaka, 2005). Breast cancer is the primary cause of death in female cancer patients in Greece between the ages of 45 and 60 (Kassimi, 2005). Tsoulea (2005) added that deaths from breast cancer in Greece have increased by 9.7% in the last decade in the population of women above the age of 70. Consequently, in Greece breast cancer threatens the lives of younger and older women.

In comparison to other member states of the European Union, the occurrence of breast cancer in Greece is problematic. The falls in breast cancer mortality rates in Greece, Portugal and France were smaller compared to those in the rest of Europe throughout the last decade (Levi et al., 2005). Greece and Portugal were at the top of the list of breast cancer incidences (Boyle et al., 2003), whilst Greek women have a 6-7% higher risk of breast cancer and a 2% higher risk of actually dying from breast cancer compared to the European average (Tzempelikou, 2005). Moreover, Bouloutza (2002b) states that half of all breast cancer sufferers in Greece undergo mastectomy as a result of the disease not being diagnosed at an early stage. This procedure is accompanied by a number of negative psychological consequences in the female population who undergo mastectomy (Bouloutza, 2002b).

Nevertheless, early detection of breast cancer could decrease mortality rates and avoid intensive therapies. It is suggested that in 40% of breast cancer incidences there could have been an early diagnosis of the condition (Ioannidou-Mousaka, 2006). In addition, Levi (2007) reported that mortality resulting from breast cancer was diminished by an average of 1.7% per year in the European Union during the period 1995 to 2000. It is claimed that this decrease should be attributed mainly to early diagnosis and effective treatment (Levi et al., 2007).

Clearly, falls in breast cancer mortality rates are lower in Greece compared to the rest of Europe, mainly due to breast cancer detected at a late stage. It is therefore of

essential importance to reveal the reasons for such a situation, focusing on Greek women's breast screening behaviour, particularly mammography screening.

#### **2.2.1.2 Structure of the Greek health system**

The Greek health system consists of three sectors for the provision of health care. According to Tountas (2003), with the creation of the National Health System (NHS) in 1983, health care in Greece conforms to the Beveridge model in that it is funded by the state budget and aims to provide free and equal health care to the entire population. Besides the NHS, an important role is also played by social insurance, which in 1999 covered 22.8% of healthcare expenditure, as well as the private sector. Total expenditure on health in the year 2000 was 9.1% of the Gross National Product (GNP). The main fund for social insurance, the State Insurance Establishment (SIE), together with various smaller funds, also provides health services to a considerable number of eligible citizens (Tountas, 2003).

The Greek NHS hospitals and health centres are under the jurisdiction of 17 Peripheral Health Systems (PHS), established in 2001. The decision to incorporate social insurance health units into the NHS has yet to be implemented (Tountas, 2003). According to Tountas (2003), hospitals in Greece are primarily: (i) NHS state hospitals; and (ii) private profit-making clinics. 60% of hospital beds in Greece are located in Athens and Thessaloniki. As regards the private sector, in recent years a tendency has been shown towards a state of oligopoly as many smaller clinics have disappeared and large medical complexes have been established. Finally, 60% of the funding of state hospitals is generated from general taxation, and 40% from social insurance contributions (Tountas, 2003).

#### **2.2.1.3 Primary Health Care (PHC) in Greece**

National Primary Health Care (PHC) is also part of the Greek health system. According to Souliotis and Lionis (2003), the PHC consists of outpatient surgeries of hospitals, the NHS health centres, the State Insurance Establishment (SIE), private doctors and private diagnostic centres (Tountas, 2003). Additionally, the production and distribution of PHC in the case of public infrastructure is mainly carried out through a network consisting of approximately 200 health centres in semi-urban and rural areas, and about 250 SIE multi-surgeries in urban areas. It is considered that this

network has a rational geographical distribution, an adequate number of medical professionals and satisfactory technological infrastructure (Souliotis and Lionis, 2003). However, Tountas (2003) claimed that in urban centres there is no organized Peripheral Health System (PHS) by the (SIE) and no real monitoring of the use of health services. The NHS health centres and SIE multi-surgeries are staffed by doctors of various specializations, while many private doctors collaborate with the sector of social insurance (Souliotis and Lionis, 2003). As a result the PHS is the object of all attempts to modify the health system over the last 20 years (Souliotis and Lionis, 2003). These changes are radical and are based upon the health models of other countries, which have, at their core, the practice of the local General Practitioner (GP) (Souliotis and Lionis, 2003; Tountas, 2003). Nevertheless, according to Souliotis and Lionis (2003), such attempts have been mostly restricted to discussion and the drafting of legal documents rather than immediate implementation. Thus, the Greek PHC system suffers from serious problems.

One problem is that the Greek health system fails to fully exploit its human resources, such as the GP (Kouklaki, 2006c). According to Kouklaki (2006c), Greece has a higher ratio of doctors than any other country in the world, while there is a lack of nursing staff. In the greater Athens area there is one doctor per 150 residents. Over half of the total doctors are based in the capital, but there is an incongruence between medical specialization and actual needs (Kouklaki, 2006c). The establishment of the institution of the family doctor, despite its importance, is problematic since only 1.5% of doctors are General Practitioners (GPs), the remainder being specialists (Tountas, 2003). It is therefore difficult to assess a patient's condition and determine whether or not there is a need for hospitalization (Fyntanidou and Petropoulou, 2000). According to Polyzos and Yfantopoulos (2000), there is a need in Greece to increase the number of GPs and reduce the number of specialists. Today there are 850 family doctors, when at least 6,000 are needed (Fyntanidou and Petropoulou, 2000).

A different situation exists in Spain, Italy, Canada, Britain, Holland and Sweden, where the family doctor is at the core of the system (Tountas, 2003). Nonetheless, according to Tountas (2003), there is also a lack of doctors in a number of developed countries, such as the USA, Holland and Sweden, however in these countries there is a sufficiency of nursing staff. In Greece, barriers to the creation of a comprehensive

Primary Health Care (PHC) system are considered to be lack of awareness of real needs, inadequate organization, and professional and academic reactions to advance the essential role of health care professionals (Polyzos and Yfantopoulos, 2000).

With regard to nursing staff, despite the fact that hospital infrastructure has been extended by 80%, there has only been an 18% increase in nursing staff (Bouloutza, 2006). As a consequence, some commentators suggest that there is a need for a further 20,000 nurses (Bouloutza, 2006). In a similar vein, Polyzos and Yfantopoulos (2000) stated that in Greece today, 3.5% of the employed population is involved in the health sector in comparison to the European Union average of 4.6%. Polyzos and Yfantopoulos (2000) also draw attention to a situation whereby 50% of nurses in Greece fail to graduate, because either they drop out or abandon the profession. The reasons for this situation include disillusionment with the quality of training provided, unsatisfactory working conditions and low salaries. Bouloutza (2006) declared that there are many Greek nurses who are insufficiently trained and are not employed in sufficient numbers to cover the needs of general health services and the PHC. To remedy this situation there is a need for long-term planning, the redefining of the moral and material status of the nursing profession and the creation of nursing specialization (Polyzos and Yfantopoulos, 2000).

In addition, an adverse development in recent years has been the shrinking of social insurance funds to the point where they are insufficient to cover the needs of the population (Georgakis, 2006). The attempt of the present government to change the provision of health is a characteristic of the particular situation (Georgakis, 2006). More specifically, Georgakis (2006) reported that a new parliamentary bill proposes that citizens pay part of the cost of medical examinations. The reason behind this is the higher cost of preventive medicine due to new and expensive vaccines and tests. It has been further proposed that the amount individuals pay for precautionary testing should be based on their income level (Georgakis, 2006). However, there is widespread opposition to the proposed legislation as it is considered to inhibit the seeking of medical examinations (Kouklaki, 2006c; Georgakis, 2006). It has also been seen as an attempt to offset the mismanagement of social insurance funds, with 2 billion euros of contributions being spent on health annually (Georgakis, 2006). Accordingly, the president of the Greek Social Insurance Employees claims that there

should be an increase in contributions so as to provide medical cover. It is feared that eventually employees will have no national insurance covering medical expenses (Georgakis, 2006). Finally, Kouklaki (2006c) also drew attention to the fact that Greek citizens are reluctant to have medical examinations, therefore with the new measures the situation will only be aggravated. The findings of the first nationwide investigation into the health and the quality of life of Greeks extenuated fears of adverse future developments (Naska et al., 2005).

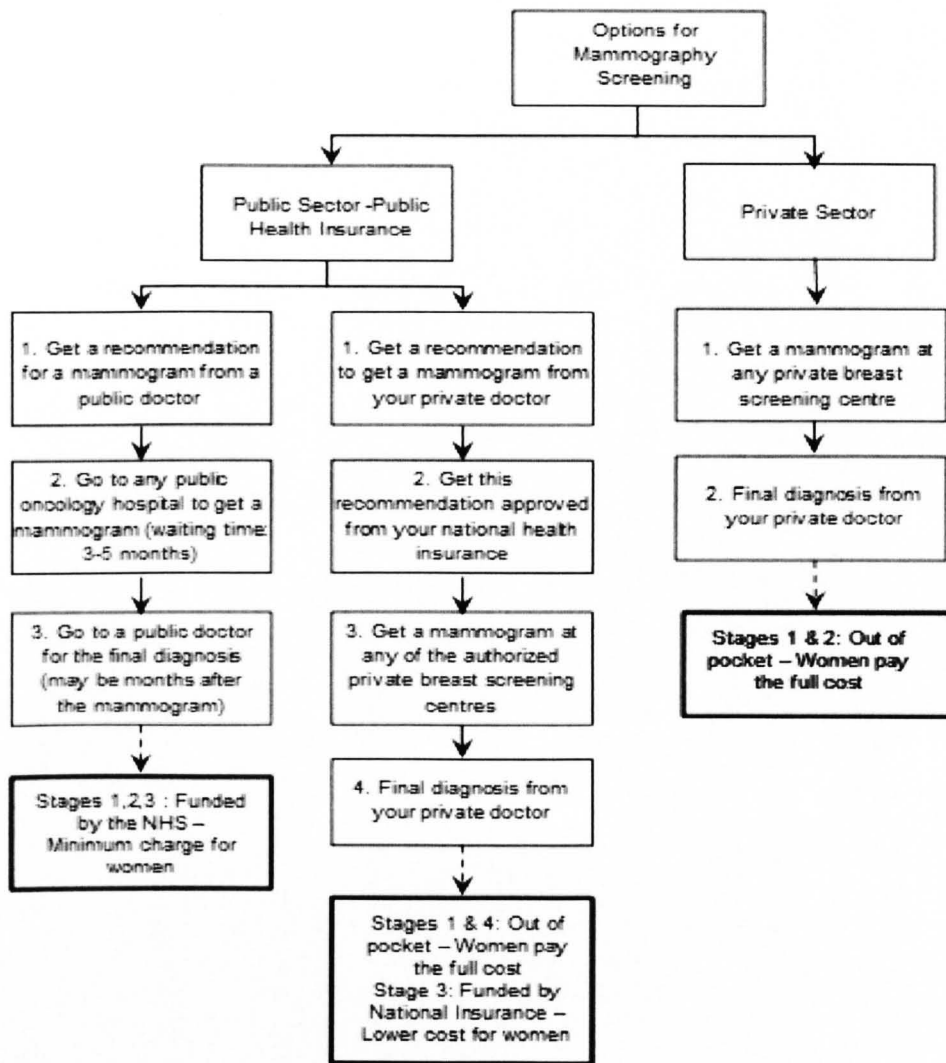
As a result of the particular situation of the Greek NHS, there has been a shift towards the private sector for the provision of medical services, especially those of PHC. The procurement of such services is paid directly by citizens, given the limited use of private insurance programmes on the part of Greeks (Souliotis, 2000). Moreover, according to recent calculations, the average annual amount spent on PHC services, both personally and through health insurance, is 2.45 million euros. This amount represents approximately 28% of total health expenditure (Souliotis, 2002). Souliotis and Lionis (2003) postulated that this situation partly stems from the limited contribution of the state budget to reform the field of health. Therefore, this is a continuation or result of fiscal policies in recent years, which were determined by considerations pertaining to achieving membership of the European Financial and Monetary Union (Souliotis and Lionis, 2003). On the other hand, Fyntanidou and Petropoulou (2000) argued that despite the inadequacy of the Greek health system, expenditure on health exceeds 8% of the Gross National Product (GNP), while according to Souliotis and Lionis (2003), problems in the health sector result not so much from lack of resources, as from the lack of consideration on the part of the state towards its citizens.

Obviously, the Greek NHS and PHS is lacking in organization, finances and human resources. These factors could be partly responsible for Greeks' abstinence from early detecting tests, particularly mammography screening. Details regarding the mammography screening test procedure and access in Greece follow.

#### **2.2.1.4 Primary Health Care (PHC) and mammography screening test**

Preventative healthcare tests are offered by the Greek health care system to the population on an opportunistic basis. This means that mammography screening depends on advice from primary care providers and on individuals' requests for screening, since a centralised invitational register is lacking (Kamposioras et al., 2008).

The mammography screening policy in Greece, as in the general Primary Health Care (PHC) sector, is divided into two main sectors; the National and the Private Health Care Sector. The options women have if they decide to get a mammography screening test are presented in Figure 1. Within the National Sector, women can attend any public oncology hospitals/clinics or authorised private breast clinics to have a mammogram, depending on their employment health insurance. Within this framework, women will have to pay a minimal or reduced amount of money for a mammogram and the doctor's Clinical Breast Examination (CBE). Such a cost depends on the employment-health insurance benefits they are entitled to. As a primary step, they have to visit a gynaecologist-mastologist appointed by their employment insurance. After they have been examined, they are supplied with a necessary recommendation note, with which they can book an appointment for mammography screening at the public oncology hospitals. When the mammography screening has been performed, a second meeting with the doctor has to be made for the final diagnosis. These take place mainly at national oncology hospitals or authorised private breast screening clinics. Alternatively, if women already have a personal, private doctor who is not authorised by their national health insurance, then their recommendation note will have to be approved by women's national health insurance. Afterwards, they can have their mammogram, in one of the authorised (by their national insurance) private breast screening clinics. On the other hand, within the private health care sector, there is no need to acquire a recommendation note in order to book for screening. In the private sector women have to incur the entire cost of mammography screening and any further examination with the gynaecologist-mastologist for the final diagnosis, unless these costs are covered by their private health insurance (Bio-iatriki Policlinic of Athens, 2007; State's Insurance Establishment of Zografou - Athens, 2007).



**Figure 1:** Options to get a mammography screening in Greece

As a result of the above processes women have to follow in order to have a minimal or low cost mammogram throughout their engagement with the NHS or their Public Health insurance respectively, mammograms may be viewed by women as a greater inconvenience. Such an issue may lead to a preference for private provision of medical services, including mammography screening. If a woman decides to book a mammography examination in one of the public hospitals in Athens or Thessaloniki, she will have to wait four or five months before she can be examined (Kouklaki, 2006c; Kouklaki, 2002). Those women who are not able to wait that long due to their need to be examined immediately either succumb to cancer or have the examination done privately, at considerable expense (Kouklaki, 2002).

Although Greece possesses a great deal of medical equipment for mammography, only 52 machines are available in state hospitals, in contrast with 272 privately owned machines (Kouklaki, 2006c). Thus, since the private sector in Primary Health Care (PHC) possesses most of the medical technology in the country (Kouklaki, 2006c; Kouklaki, 2002) and the public sector involves various deficiencies and long waiting lists, approximately half of the total medical expenditure goes to the private sector (Kouklaki, 2006c). Consequently, there are more than 200 private clinics in Greece, 68% of which are based in Athens and Thessaloniki, as well as a further 600 privately owned diagnostic centres (Fyntanidou and Petropoulou, 2000). The administrator of the Institute of Social Policy of the National Centre of Social Studies, Professor A. Sisouras, also attributes the success of private medical services to the inefficiency of the public sector (Fyntanidou and Petropoulou, 2000). In order to improve the particular situation, he proposes a new managerial model for public hospitals that would solve many of the current problems (Fyntanidou and Petropoulou, 2000).

The repercussions of the above-mentioned deficiencies and dysfunctional situation of the Greek PHC include general dissatisfaction on the part of citizens. It is indicative of the situation that according to Fyntanidou and Petropoulou (2000), Greeks rank second within the European Union in their dissatisfaction with the provision of medical services. As a consequence, the lack of the PHC mentioned above could result in women's reluctance to undergo an annual mammography screening. Therefore, there is a need to determine to what extent problems in PHC result in the low number of breast cancer examinations and to what degree socio-psychological factors are to blame.

#### **2.2.1.5 Greek contribution to the emphasis of mammography utilization**

The importance of mammography screening is stressed in various ways in Greece. The European parliament proposed a resolution on the prevention of breast cancer in October 2006. More specifically, according to the Athens News Agency (2006) this resolution was based on three questions posed to the European Commission by the committees for the Environment, Public Health, Protection of Consumers/Employment, Social Issues/Rights, and Equality between the Sexes. The particular resolution called on all member states to implement mammography examinations on a national level and at two-year intervals for all women between the



ages of 50 to 69 (Athens News Agency, 2006). The decision was based on statistics showing that breast cancer affected women of increasingly younger age groups (Athens News Agency, 2006). Specifically, Athens News Agency (2006) pointed out that 35% of sufferers are under the age of 55, while 12% are under the age of 45. The objective of the European Union resolution is the alignment of all member states with the policy of regular breast cancer examinations. Only 11 members of the European Union have been implementing mammography on a national level since 1992, when the European Union originally decided on a policy on this issue (Athens News Agency, 2006).

The necessity to combat breast cancer is also stressed by a host of anti-cancer societies. Despite the commendable efforts of the Hellenic Mastology Society, there remains a pressing need to persuade Greek women to deal with their anxiety and reluctance to be examined for breast cancer (Athens News Agency, 2006). An indication of the existing situation is given by the results of a pilot scheme, implemented by the municipality of Athens from April to October 2005, to provide free mammography screenings (Athens News Agency, 2006; Xristopoulou, 2005). Over 10,000 letters were sent in April 2005 to women residents of Athens aged between age 45 and 69, informing them in detail of the scheme (Xristopoulou, 2005). As part of this programme 1,300 mammograms were carried out and six cases of cancer were diagnosed (Athens News Agency, 2005; Xristopoulou, 2005). Nevertheless, the response of women was poor, as the number tested was quite low. Moreover, the particular scheme excluded women over 69 years old, despite their susceptibility to breast cancer (Tsoulea, 2005). The results of this programme are indicative of the apparent reluctance of Greek women to be examined in this way for breast cancer.

In conclusion, this section has presented the overall Greek context, by illustrating the particularly Greek general and primary health care systems. Emphasis has been given to the problematic parts where the Greek health care context fails or encounters difficulties, particularly with regard to mammography screening. Such wants in the Greek HCS could be responsible for women's abstinence from breast screening. Nevertheless, further research is needed on the factors that influence women's breast-screening behaviour. Reference was also made to the Greek contribution in relation to

mammography screening test. Within the next section, a detailed presentation and evaluation of the literature relevant to the development of this study is made. This consists of the importance of mammography screening and the debates in relation to its efficacy, and the critique of Greek women's behaviour towards mammography screening and early detecting health examinations. A critical review of related theoretical frameworks is made, together with the justification of the selected theoretical framework for this study.

### **2.2.2 Mammography Screening – Current Debates**

Mammography screening constitutes one of the most essential early detecting tests of breast cancer (Kimberly and Hogan, 2003). The role of mammography screening is to detect tumours before they are clinically palpable, minimising the probability of diagnosing breast cancer at an advanced stage (Kimberly and Hogan, 2003). A substantial number of trials have been performed and have clearly shown that mammography screening reduces breast cancer mortality in women aged 50 to 74 years by approximately 26% (Heath, 2009; Savage, 2009; Hoffken, 2001; McCaul and Tulloch, 1999). Nevertheless, there are others who doubt its efficacy in reducing mortality rates and who account more side-effects than benefits from participating in mammography screening. A description and critique of such arguments is made below.

#### **2.2.2.1 Mammography screening and its efficacy**

With regard to several randomised trials that support mammography-screening use, the ability of screening to reduce mortality from breast cancer has been demonstrated. According to Gotzsche and Olsen (2000), after heated controversy, it now seems to be generally accepted that the benefit of screening for breast cancer with mammography has been appropriately corroborated through a total of half a million women in large randomised trials carried out in New York (USA); Edinburgh (Scotland); Canada; and Malmo, Kopparberg, Ostergotland, Stockholm and Goteborg (Sweden). A post-analysis of an update of the five Swedish trials, which used data from individual patients, was particularly influential. Interestingly, based on its findings, screening decreases breast cancer fatality by 29% in women aged 50 to 69 years old. Hoffken (2001) and Josefson (2002) added that approximately 4,500 deaths from breast cancer per year could be avoided by routine screening. Thus, routine screening has been proven to reduce breast cancer mortality rates, which renders mammography screening a reliable tool to detect breast cancer at an early stage.

A closer exploration of a number of indicative research studies reveals a substantial reduction in breast cancer fatalities, if screening were used. According to Duffy et al. (2002), organized service screening in 7 Swedish counties, covering approximately 33% of the population of Sweden, resulted in a 40-45% reduction in breast carcinoma mortality among women actually screened. The policy of offering screening is

associated with a mortality reduction in breast carcinoma of 30% in the invited population, for both those exposed and unexposed to mammography screening. The results of the study indicate that the majority of breast cancer mortality reduction is indeed due to the screening procedure (Duffy et al., 2002). Accordingly, Jonsson (2001) concurs that mammography screening decreases the mortality of breast cancer in the age group 50-69. With a mean screening interval of 28 months and with a mean follow up of 10.6 years of the Swedish service-screening program, the reduction in excess mortality from breast cancer was estimated at 16%. When adjusting for biases due to inclusion of cases in the study cohorts diagnosed before invitation to screening, and lead-time bias, the reduction increased to 20%. This reduction of mortality from breast cancer due to screening is in-line with previous Swedish randomized studies (Jonsson et al., 2001). Similarly, the United States Preventive Task Force, an independent panel of health care experts that advises the department of Health and Human Services, after examining published reports over a two-year period, concluded that there is 'fair' evidence that mammography for women in their forties significantly reduces mortality from breast cancer (Miller et al., 2002). Therefore, the United States of Health and Human Services declared that all women over forty should get mammography screening at least once every two years (Miller et al., 2002).

However, the valuable utility of mammography screening has been contrasted with a variety of side-effects the particular test could incur – resultant from being used under inappropriate circumstances or women being inadequately informed about decision making. Although mass-mammography screening appears to reduce breast cancer mortality in women aged 50 to 74 years by approximately 26% (Hoffken, 2001; McCaul and Tulloch, 1999), a strong argument regarding the benefits of mammography for women aged 40 to 49, and for women above 70, has appeared (Heath, 2009; Savage, 2009; Berg, 2002; Miller et al., 2002; Dilhuydy and Barreau, 1997). In other words, perceptions of mortality reduction and of judgments about the balance between the benefits and possibly harmful effects and the effort required to attend testing differ substantially at those ages (Ransohoff and Harris, 1997; Zimmerman and Connor, 1989). Thus, despite the broad use of mammography screening, there are many critiques against its efficacy regarding breast cancer mortality reduction. Details of such critiques, debates and mammograms' side effects follow in the next two sub-sections.

#### **2.2.2.2 Mammography screening efficacy: the debate**

The arguments in the controversy associated with mammography screening and its efficacy are less about facts than about judgments, perceptions and values. Koning (2002) reported that this debate about the true benefit of mammography screening, lasting over 25 years (Vejborg et al., 2002), includes several key issues. One of them is the design of the trials, which found that mammography use reduces breast cancer mortality rates. Potential harms of screening such as unnecessary biopsies and patient anxiety (Kimberly and Hogan, 2003), the relative roles of physicians and patients in decision making, and how to factor cost into screening decisions (Ransohoff and Harris, 1997) are also subject to debate. Thereby, the particular debate should be open and welcomed, not censored in order to compromise effective communication and rational discussion (Gotzsche, 2004; Ransohoff and Harris, 1997). An attempt to analyse and critique this debate follows.

Gotzsche and Olsen (2000) challenged the reliability of existing studies that support the view of decreased mortality due to mammography screening. According to Gotzsche and Olsen (2000) the age-distribution in study and control groups matched perfectly in only two trials, one in Malmo (Andersson et al., 1988) and the other in Canada (Miller et al., 1992b). However, these two methodologically adequate trials did not show a decrease in mortality from breast cancer. Thus, Gotzsche and Olsen (2000) reasoned that, since trials that did show a reduction were biased, breast-cancer screening does not reduce disease-related mortality and is therefore unjustified (Koning, 2002). In the Gotzsche and Olsen (2000) review, however, there was no appreciation of the appropriate mortality-related measure of the screening's usefulness; and correspondingly, there was no estimation of the magnitude of this measure (Miettinen et al., 2002). Interestingly, Miettinen et al. (2002) proposed that cancer is malignant in the sense that its natural course is fatal, meaning that its case-fatality rate in the absence of curative treatment would be 100% if there were no role for other causes of death. Miettinen et al. (2002) added that the goal of mammography is to maintain early diagnosis and, therefore, early treatment, which is presumed to be curative in more cases, than later treatment. In other words, the aim of mammography is to reduce the mortality rate. The authors of the Malmo study (Andersson et al., 1988) referred to substantial reductions in breast-cancer mortality after a six-year delay (Miettinen et al., 2002). They also mentioned that such a delay

in what the mortality gain is to be expected in randomised controlled trials that compare screening with no screening. This can be supported, since the reduced case-fatality rate presumed to be a consequence of screening tends to result in fewer deaths from the cancer only after a suitable delay. Analysis should therefore focus on deaths in the appropriate segment of follow-up after discontinuation of screening (Miettinen et al., 2002). Thus, Olsen and Gotzsche (2001) did not address the case-fatality benefit of screening-associated early intervention, which, if it exists, becomes apparent only after a delay of several years. As a result, they concluded that there is no reliable evidence that screening for breast cancer reduces mortality, which consequently leads to greater use of more aggressive treatment (Miettinen et al., 2002), such as mastectomies.

The dispute regarding mammography's efficacy associated with the reduction of breast cancer mortality has provoked adverse criticism from many who believe that screening saves lives (Thornton, 2001). Larry Norton, president of the American Society of Clinical Oncology and researcher at Memorial Sloan-Kettering Cancer Centre in New York City in 2002, rejected the Gotzsche-Olsen analysis, dismissing it as a scholarly debate about 30 year-old studies and 30 year-old therapies (Miller et al., 2002). He also emphasized that patients are getting far better diagnosis and treatment due to mammography, which can produce a 25% to 30% reduction in mortality (Miller et al., 2002). Similarly, Kathleen Pritchard, head of clinical trials and epidemiology at Toronto-Sunnybrook Regional Cancer Centre, Toronto (in 2001) and a member of the Cochrane Breast Cancer Group, agreed with some of the Gotzsche and Olsen's points but not with their overall conclusion (Miller et al., 2002). She admitted that all of the trials Gotzsche and Olsen criticised as problematic, have flaws, however, it is not likely that there will be more trials that address this issue (Miller et al., 2002). She added that screening (particularly mammography), early diagnosis, and better systemic adjuvant therapies are necessary in decreasing mortality from breast cancer (Baltic, 2001). Correspondingly, William Gradishar, chair of the American Society of Clinical Oncology's Cancer Communications Committee and director of the breast cancer program at Northwestern University, Chicago, claimed that heterogeneity in how the trials were conducted makes them problematic to group for analysis (Baltic, 2001). However, he concluded that mammography screening remains an important tool for the scientists to identify abnormalities at an earlier stage (Baltic,

2001). Thus, even though mammography's efficacy has been questioned by several researchers, its utilization remains important for the early detection of breast cancer, and thus the reduction of mortality rates from breast cancer.

Other researchers make stronger critiques associated with the importance of mammography screening's utilization, which encompass political interests. More specifically, guidelines for mammography remain unchanged (Smith et al., 2004), because the debate of mammography screening for women aged 40 through 49 is prey to political and other interests, which aim to inappropriately influence clinical practice guidelines (Ernster, 1997). On the contrary, guidelines should be based on scientific evidence (Ernster, 1997). Similarly, Dixon-Woods et al. (2001) commented that the benefits of breast screening are partial and potentially misleading, specifying that such benefits may represent a prioritising of political and professional agendas over those of patients. Therefore, it is necessary to set the basis for a more honest and responsible communication between patients and health care providers, supported by resources that truly reflect current evidence.

However, the debate itself may hide political and financial interests. It seems that this debate may be particularly acrimonious, given the widespread interest in such tests among the public, powerful financial interests on the part of the biotechnological sector, and the lack of evidence that testing has benefits (Woloshin et al., 2000). Additionally, the mammography debate results in tensions among research colleagues, which indicates that in some cases even in the best organizations raw evidence is insufficient to influence women's opinion (Horton, 2001). Thus, despite the present controversy regarding mammography screening, emphasis should be placed upon the official recommendations for mammography screening utilization on a global basis, which underlines the importance of women participating in this test. Most insurance companies and managed care organizations continue to use mammography as a quality marker for patient care (Kimberly and Hogan, 2003). Thus, the mammography screening test is still one of the most efficient tools to detect breast cancer at an early stage, in order to decrease mortality rates and advance the quality of life for those women with breast cancer.

Nevertheless, health care professionals should concentrate on the individualized benefits of women and accommodate their information provision into an appropriate decision-making process, especially since the mammography screening test is applied to seemingly healthy women (Heath, 2009; Koning, 2002). As Heath (2009) noted, it is not wrong to say 'yes', but neither it is wrong to say 'no' to mammography screening. Thereby, each woman should be able to make her own decision regarding the utilisation of the mammography screening test; however, this presupposes them to be well-informed about the benefits and the possible harms of this test (Heath, 2009). Hence, especially within the Greek context, where breast cancer mortality is high and breast cancer is detected at a later stage, consideration of the reasons that lead to screening behaviour is essential.

#### **2.2.2.3 Debates on potential benefits and side-effects of mammography screening**

Apart from the debate on the decrease of mortality due to mammography screening utilization, there is also disagreement about both the non-mortality-related benefits and the harms of screening. With reference to Ransohoff and Harris (1997), although reduction of breast cancer-related mortality rates is the primary outcome in clinical trials, other issues such as individuals' evaluation of the benefits and side-effects in relation to mammography screening may be more important. Such debates focus on the potential benefits of less intensive treatment and relief associated with participating in mammography screening. The debates on the possibly harmful side-effects of participating in mammography screening include false positive results, false negative results, over-diagnosis, psychological morbidity, cost and radiation in relation to the test.

##### ***Potential benefits***

One of the potential non-mortality-related benefits of screening is less intensive therapy (for example, lumpectomy rather than mastectomy). This is because it may require less aggressive treatment in the case of early detection of breast cancer through mammography screening. However, the decision to treat using lumpectomy does not greatly depend on finding cancer at a pre-palpable stage, since there are also factors other than tumour size included in the treatment decision (Ransohoff and Harris, 1997). Thus, less intensive therapy depends on the individual circumstances and could not be characterised as a definite benefit for all.



Women's relief, another potential benefit of screening reported by many women after a negative result following a mammogram, is also in dispute. More specifically, Ransohoff and Harris (1997) claimed that the reassurance a woman should gain from a negative result from a mammogram is the difference between the probability of cancer before mammography screening and the probability of cancer after a negative result on mammography. However, it is unclear whether women derive relief due to a better understanding of their actual risk (Ransohoff and Harris, 1997). Silverman et al. (2001) added that the sense of relief could prevail towards any pre-screening hesitation and anxiety about a mammography screening test. Thus, the non-mortality-related benefits of screening look greater to some persons than to others, depending on their individual needs and perceptions associated with the importance of mammography screening utilization.

### *Potential side-effects/harms*

False positive results are probably the most severe harmful side-effect of mass mammography screening. In the case of false positive results, some women will be under an intensive follow-up procedure and will remain anxious (Dilhuydy and Barreau, 1997). Women who are being recalled, even if they are diagnosed as negative later, temporarily experience the diagnosis of cancer. It does not cause all women definitive psychological distress but it is traumatic for many of them. Barton (2001) added that there is an increased use of primary care and mental health care services among women who have false-positive mammograms. Nevertheless, it appears that anxiety decreases after complementary investigations, since the final result is 'negative'. Dilhuydy and Barreau (1997) found that even though most women consider that this experience is only a temporary decrease in quality of life, nearly 30% of biopsied women will feel residual pain in the breast, and 33% experience reduced sexual sensitivity. This experience is described by 5% of these women as the worst thing they had ever experienced, and 2% would never again attend another health screening test (Dilhuydy and Barreau, 1997). Hence, harmful physical but also psychological effects are also part of the unnecessary recalls and biopsies as a result of false positive results.

False reassurance on the other hand, can be detrimental, because it might subsequently delay diagnosis and treatment. This could happen if symptoms occur, resulting in

greater treatment morbidity and poorer prognosis, especially for women with fast-growing tumours (Dilhuydy and Barreau, 1997). According to Kimberly and Hogan (2003), the specificity of a single mammogram is 94% to 97%, while its sensitivity ranges from 71% to 96%. However, Woolf and Dickey (1999) claimed that even though mammography misses 20% to 40% of the tumours, this depends on the patient's age, the density of woman's breast, the calibration of the equipment, and the competence of the clinician performing the test and radiologists reading the film. Apparently, a variety of factors should be addressed during mammography screening procedures in order to eradicate any possibility of false-negative results.

Another risk during mammography is a considerable danger of over-diagnosis of invasive cancers. Gotzsche (2004) claimed that some cancers detected by screening would not have become clinically apparent during the woman's lifetime (Dilhuydy and Barreau, 1997). As a result, this phenomenon represents over-diagnosis and implies over-treatment (Gotzsche, 2004). According to Gotzsche (2004), this is because the average age of breast cancer diagnosis in the screening trials is about 60 years, and many of the invasive cancers detected by screening grow quite slowly. Some of these cancers are therefore detected only if women are screened, because if they are not screened, the cancers will not become apparent before the women die from other causes (Gotzsche, 2004). As a consequence of over-diagnosis, intensive therapy, such as mastectomies and chemotherapies, are increased, an incidence that would not have been performed in the absence of screening. Nevertheless, as Karla Kerlikowske, M.D. professor of medicine, epidemiology, and biostatistics at the University of California, San Francisco, stated:

There is no question that we over-diagnose some cancers, but the question is how many and which ones are they? (Heath, 2009, p. 1534).

Psychological morbidity is a harmful side-effect of screening. Dilhuydy and Barreau (1997) noted that psychological morbidity may result from intensive follow-up of women with abnormal mammograms, who would never have had any trouble with it if they had not been screened, and from medicalisation of healthy women when a biopsy shows a border-line lesion such as regular hyperplasia or lobular neoplasia.

Additionally, some women can lose their trust in the efficacy of early detection of breast cancer because of the false promises and failure of screening. Such a case would be if a woman was told that screening would save her breast, then the cancer recurred locally and she had to finally undergo mastectomy (Dilhuydy and Barreau, 1997). Similarly, if a women was found to have metastasis, being under the impression she would have a good outcome if she attended for mammography, she would be at the risk of psychological collapse (Dilhuydy and Barreau, 1997). Thus, on several occasions, such as over-diagnosis, recurrence of cancer and metastasis, psychological morbidity can occur, despite women's participation in mammography screening.

Despite the fact that mammography screening aims to reduce mortality from breast cancer, it could be expensive in several circumstances. Kattlove et al. (1995) highlight that mammography is extremely expensive for both women younger or older than 50 to 69 years old. A Canadian study (Miller et al., 1992a), which has been highly criticized, is the only study that specifically evaluated the age group of women 40 to 49 years old and found no benefits. Therefore, according to Kattlove et al. (1995), a cost-effective package would restrict mammography to biennial screens for women aged 50 to 69 years. Conversely, Eddy (1997) supported the view that there is a need for better analysis regarding the cost-effectiveness of mammography screening. Otherwise, there is a high risk that the vivid debates regarding the appropriate role of mammography in younger women will be denounced as the same kind of misinformation and tension that has nearly destroyed the discussion about evidence in favour of mammography screening utilization for women under the age of 50 (Eddy, 1997). Thus, the high cost of mammography screening could lead to abstinence from mammography screening, particularly in Greece, where the health insurance system may coerce women to resort to the private health care sector.

An additional side-effect of mammography screening is a small risk of radiation-induced breast cancer by exposure to mammography, which is related to the given dose and age at screening. Particularly, as Dilhuydy and Barreau (1997) concurred throughout their review, it has been calculated that assuming an annual modern low-dose mammography from the age of 40, the woman's lifetime risk of developing breast cancer would be increased from 9.3% to between 9.315% and 9.4%. This

indicates that the carcinogenic potential of modern mammography with one or two views per breast is very low (Dilhuydy and Barreau, 1997). Therefore, for an individual, the risk of radiation through mammograms is negligible; nevertheless, it must be considered when dealing with the whole female population. This risk could be considered unacceptable, as low as it is, if there is no clear benefit, for example in 40 to 49 year-old women. However, it is possible that this risk particularly concerns genetically predisposed women, who may be more susceptible to radiation hazard (Dilhuydy and Barreau, 1997). Thus, radiation through mammography screening test includes many parameters, and it could not be considered as a serious criterion for women's decision to abstain from this test.

In conclusion, the nature and magnitude of these harms are not precisely known, nor is it clear how they affect the ultimate decision as to whether to have mammography screening. Some persons see these non-mortality-related harms as important and potentially high, whereas others see them as exaggerated and easily eliminated by appropriate counselling (Ransohoff and Harris, 1997). Nevertheless, it is reported that women are not often informed about the possible benefits and potential harms of mammography screening (Gotzsche, 2004). Such harms can be caused especially by the removal of early tumours, since their detection presents a dilemma to health care professionals for their following treatment (Gotzsche, 2004). Therefore, since the balance between possible benefits and dangers is delicate, especially due to the fact that mammography screening is also applied to the healthy population, the need for honest information provision to women on the pros and cons and individual decision-making rather than blanket recommendations is underlined (Gotzsche, 2004; Chamot and Perneger, 2001).

Mammography screening for breast cancer may save lives, just as it may negatively influence others. Many questions remain unanswered about mammography's efficacy, and it seems that the response varies with the type of disease (Dilhuydy and Barreau, 1997). Screening is probably not effective when the lesion is too rapidly or too slowly growing, and it may be detrimental in some cases with peculiar biological and evaluative features (Dilhuydy and Barreau, 1997). Questions also remain unanswered about the harmful side-effects of screening, and about how to deal with and to treat detected border-line cases, in situ and micro-invasive lesions. Dilhuydy and Barreau

(1997) also noted that there are important differences between epidemiological features from one country to another, thereby preventing a global approach. Therefore, it is suggested that a woman aged above 40 should not be refused mammography screening, since it could save her life.

Several approaches could be characterised as useful in order to defuse the aforementioned debates and improve discussion. According to Ransohoff and Harris (1997), those on both sides of the debate might agree on several issues. Firstly, the evidence from clinical trials is widely agreed-upon, and thus the main task is to focus on the values of individual women who are making decisions. Secondly, they may also agree that the values of women may differ substantially and that these differences should be respected. Thirdly, both individuals and the public should be fully and fairly informed about the benefits and disadvantages of screening. Finally, it is also apparent that cost-effectiveness should at least be considered during the decision-making process (Ransohoff and Harris, 1997). Therefore, the debates may be defused in part simply by understanding the anatomy of a decision, so that specific disagreements may be identified and explored. Within such a framework, presumably common goals may be identified, even if deliberating parties have different perspectives (Ransohoff and Harris, 1997).

## **2.3 Greek Women's Behaviour Towards Mammography Screening**

### **2.3.1 Greek Health and Screening Life Style**

One of the reasons for the unacceptable number of breast cancer cases and resultant deaths in Greece may be the behaviour, lifestyle, and quality of life of contemporary Greek women. Tountas (2003) drew attention to the fact that whereas in the 1980s Greeks were characterized as having the longest life-spans in the world, by 2001 they had dropped to eighth place, and today they are fifteenth with regard to longevity. As part of the European programme for cooperation between Medical Science and Society, the University of Athens carried out the first thorough investigation into the quality of life and use of health services in Greece in 2005 (Naska et al., 2005). According to the findings of this research, 65% of early deaths and 80% of cardiovascular disease, as well as 40% of cancers could have been prevented, thus increasing the average life span of the population (Naska et al., 2005).

Modern lifestyle issues were seen to be the primary cause of the particular situation (Naska et al., 2005). According to Naska et al. (2005), the Greek population has, to a great extent, abandoned its traditional diet and adopted a western way of life and dietary habits, even though it has been proven that the Mediterranean diet prevents certain types of cancer, including breast cancer. This is evident from the lower incidence of such cancers in southern European countries (Ferro-Luzzi and James, 1997; Ferro-Luzzi and Sette, 1989). However, Greeks today consume greater quantities of red meat and smaller amounts of vegetables, pulses and fruit than those recommended for daily consumption (Naska et al., 2005). In addition, they fail to exercise regularly (Naska et al., 2005). As a result, breast cancer mortality in Greece today is approximately at the same level as in the rest of the Western world (Katsanopoulou, 2006). Moreover, the change in Greek lifestyle does not only concern diet, but also includes pursuing enhanced career prospects (Keramopoulos et al., 2005). As a result of this, women postpone child bearing until they are older, which is an additional factor in the increase of breast cancer cases in recent years (Keramopoulos et al., 2005). In conclusion, Tountas (2003) claimed that Greeks today are fearful of preventive tests, as well as failing to pursue a healthy lifestyle.

In contrast to the other countries of the European Union (EU), Greeks are differentiated from the rest of the EU regarding their relationship with preventive tests, particularly mammography screening (Tsoulea, 2004). They are far from converging with the rest of Europe in safeguarding their health. Indicative of the particular situation is the fact that Greek women come fourth from last in annual mammography, and monthly breast self-examining (Tsoulea, 2004). It is interesting that one in three Greek women from 45 to 54 years of age (Kouklaki, 2006c) and two in every three over the age of 50 have never undergone mammography screening (Tsoulea, 2004). Furthermore, 30% of Greek women aged from 50 to 59 have had a mammography screening at least once in their lives, while the corresponding number for the 60 to 69 age group is only 15% (Fyntanidou and Petropoulou, 2000).

Recent studies suggest that despite the small increase in Greek women's breast screening participation, the level of their participation compared to other countries is still low. For example, Kamposioras et al. (2008) identified that from 366 primary care physicians recruited from nine Greek provinces, only 37% of them practice mammography screening. In addition, Mauri et al. (2009) found that Greeks are not having the recommended screening tests. Only 22.8% of the 7012 adults from 30 Hellenic areas had mammography screening in the last 2 years (Mauri et al., 2009). Similarly, Dimitrakaki et al. (2009) found that the percentage of the population in Greece receiving screening services recommended by the European Council is low (Dimitrakaki et al., 2009). Only 3.8% of women aged 50-69 years underwent mammography screening in the last 3 years. Dimitrakaki et al. (2009) suggested that such screening behaviour is strongly associated with social factors, the roots of which should be further investigated. This could help to reveal the inhibitors that lead Greek people to adopt poor-quality cancer screening practices.

The majority of Greek women who do discover breast tumours do so on their own, without having followed their doctors' recommendations on the importance of regular mammography checks (Bouloutza, 2003). They seem to ignore the fact that the basic factor in combating breast cancer is early diagnosis by means of mammography screening (Bouloutza, 2003). According to research carried out in two of the largest gynaecological clinics in Athens, out of 1,067 women who underwent surgery for breast cancer in the period 1980 to 2003, only in 40 cases, representing a mere 5% of

these women, had the tumour been discovered at an early stage through mammography (Keramopoulos et al., 2005). This small percentage of women achieved a better quality of life, free of the disease for a longer period, due to more effective surgical treatment (Keramopoulos et al., 2005). Keramopoulos et al. (2005) added that the majority of the 1067 women mentioned above (74%), had detected the tumour themselves. Of these, only 26% had followed their doctor's recommendations on the correct way of self-examination. In contrast with Greece, early diagnosis of breast cancer is at a level of 60% in other European countries, and 50% in the United States (Georgakis, 2006; Bouloutza, 2002b). It can therefore be concluded that due to Greek women's abstinence from mammography screening, most of the tumours detected are at advanced stages, leading women to subsequent treatment which can have an adverse effect on their quality of life. Therefore, there is an essential need to reveal the factors that influence Greek women's mammography screening behaviour in order to add to knowledge of women's needs in relation to breast screening and their engagement with mammography screening process.

### **2.3.2 Greek Women's Abstinence from Mammography Screening in Rural Areas**

Besides those residing in Athens, Greek women in other urban and rural areas of the country are also vulnerable to breast cancer, as they are misinformed on the subject of prevention and early detection. In a breast surgery clinic in Thessaloniki (the second most populous city in Greece), 76% of women were ignorant regarding the importance and means of early diagnosis of breast cancer (Myrtsioti, 2005). 22% of these women were not even aware of the age at which mammography should be carried out (Myrtsioti, 2005).

In addition, according to Borgias et al. (1998), a ten-year survey was conducted in south-western Greece to determine breast cancer incidence and the number of mammography screenings carried out between 1981 and 1991. The findings showed that 8.3% of cases were diagnosed and effectively treated at an early stage. This small percentage is possibly due to lack of uniformity in the population of south-western Greece, which is distributed in urban, semi-urban, rural and mountain locations (Borgias et al., 1998). This means that a substantial part of the population is at some distance from large hospitals, and does not have ready access to oncological and



breast cancer facilities, these being based in Athens and Thessaloniki, the two largest urban cities (Borgias et al., 1998).

The above findings are further supported by research carried out by Giakimoba (2003) a decade later. This latter assessment of the situation concluded that preventive measures are lacking in the provinces. Interestingly, only 4.97% of the 181 women who were diagnosed with breast cancer in the period 2000 to 2002 had undergone regular mammography examinations (Giakimoba et al., 2003). Thus, since most urban and rural areas in Greece are lacking in breast clinics, this could be the main reason for those women's abstinence from mammography screening. However, the above research studies were conducted using a quantitative approach, without focusing on the in-depth factors that may influence women's breast screening behaviour. Therefore, lack of knowledge and breast clinics in rural areas may not be the only reason for women's abstinence from mammography screening tests.

It would be of interest, though, to investigate the factors that influence those women who do not have such an obstacle to mammography screening access. This could add new knowledge about women's needs in relation to breast screening, and thereby health care providers could be able to follow the necessary interventions to inform and educate women regarding breast screening. Such interventions could also help them detect cancer at an early stage and dispel possible factors that render women reluctant to be examined for tumours.

To summarize, Greeks nowadays do not follow a healthy life style like that they did in the past, and they are reluctant to participate in screening early detecting tests and health examinations. Regarding mammography screening test, the percentage of Greeks' participation is very low, especially compared to other European countries, which results in an increased number of breast cancer incidences detected at an advanced stage, and increased mortality rates from breast cancer. Lack of breast cancer clinics in rural areas increased the percentage of women's abstinence from mammograms. Nevertheless, such an obstacle to their access and thereby participation in this test may not be the only reason for women's abstinence. Thus, other possible factors responsible for their behaviour need to be explored. Such influential factors previously identified in other countries are presented and analyzed in the next section.

## **2.4 Factors that Could Influence Mammography Screening Behaviour**

It has gradually been recognized that the factors which constitute inhibitors in women's behaviour regarding general screening tests are multidimensional. Meissner et al. (2004) declared that the influencing factors associated with individuals' behaviour towards mammography screening develop from multiple levels, such as health care providers, organizations, and communities/societies. According to Womeodu et al. (1996), there are a variety of factors that inhibit screening, such as financial cost, concern about radiation, embarrassment, ease of access, including travel difficulties, anxiety about test results, not having symptoms, inconvenience, forgetting or procrastination, and discomfort associated with the screening test. Achat et al. (2005) added that mammography screening behaviour is positively associated with age, marital status, knowledge and beliefs about mammography screening test. Nekhlyudov et al. (2003) concurred that the most commonly cited factors that influence women's decisions regarding mammography screening include exposure to media information about breast cancer and mammography screening, personal experiences with others who have breast cancer, interactions with their physicians and psychosocial factors. A variety of influential factors identified in previous research studies towards women's breast screening behaviour are presented in this section. These include psychological factors, demographic and cultural characteristics, media, and health care providers. The factors that could influence women's informed decision making as well as these which influence older women are also presented.

### **2.4.1 Psychological Factors**

The psychological factors that can influence women's behaviour towards mammography utilization or abstinence can vary. Nekhlyudov et al. (2003), who conducted 16 semi-structured, in-depth telephone interviews, cited that women who participate in annual preventive mammography screening attribute the need for screening to a sense of self-efficacy or being proactive about their health. On the other hand, denial of mammography utilization could be attributed to anxiety and fear of breast cancer diagnosis, as well as low-level of risk perceptions and worry. This can lead to lack of engagement with early detecting measures of breast cancer such as mammography screening (Meissner et al., 2004; Nekhlyudov et al., 2003). For a

number of women it is also a matter of focusing on health and prevention and not being screened is an indication of personal neglect and irresponsibility (Nekhlyudov et al., 2003). These women were African-American, aged 38 to 45, and were receiving care at a large New England medical practice.

Individuals' experiences and observations also appear to have a significant role in their final attendance for breast screening. Meissner et al. (2004) provided an overview on social science cancer screening intervention research and the topics addressed in the journal. In particular, Meissner et al. (2004) identified and addressed the benefits and harms associated with screening before conducting interventions to promote the uptake of screening tests. Some of the obstacles that may arise in relation to participation in mammography screening relate to women's mammography screening experiences (Meissner et al., 2004). Such inhibitors originated from women's complaints of painful mammograms and discomfort (Dilhuydy and Barreau, 1997), which may be important and influence whether women schedule their next mammogram.

Thus, positive and negative breast cancer experiences were identified as facilitators or barriers to mammography screening participation respectively. Nevertheless, the complexity of psychological factors in relation to Greek women's breast screening behaviour has not yet been investigated.

#### **2.4.2 Different Demographic and Cultural Characteristics**

Demographic variables could also be closely associated with screening behaviour. One of them could be individuals' economic status. McCaul and Tulloch (1999) reviewed the reasons people decide to obtain or to avoid screening for cancer. One of the topics their review focused on was also the costs and benefits of getting screened. More specifically, McCaul and Tulloch (1999) pointed out that a high socio-economic status relates positively to screening levels. This is due to the fact that people with high income do not perceive the cost of mammography screening as a barrier; they can afford private insurance coverage and therefore may visit physicians more frequently and thus receive screening recommendations (McCaul and Tulloch, 1999). Additionally, the majority of people with higher income are also better educated, and

they could be more knowledgeable about their risk of getting breast cancer (Meissner et al., 2004). On the contrary, not having the necessary means to pay for screening or lacking a recommendation from a provider are likely to remain important inhibitors, especially to those who must pay for tests out-of-pocket, or those without a regular health care provider (Meissner et al., 2004). However, further in-depth investigation is needed on this issue. Such individualistic characteristics are age and other demographic characteristics, which may also influence breast screening behaviour (Meissner et al., 2004; McCaul and Tulloch, 1999).

### **2.4.3 Media and Health Care Providers as Influential Factors**

Since breast cancer is the most commonly diagnosed cancer in women, it receives considerable press coverage (Wells et al., 2001). Media is an important source of information for scientific and medical topics, not only for the general public, but also for the scientific and medical communities and policy makers. They can provide a forum for opinion and debate, give advice and make recommendations, set the public agenda by identifying newsworthy topics, and affect public policy and medical and scientific research (Wells et al., 2001). In Nekhlyudov et al.'s (2003) study, it was identified that newspapers, magazines, and television played an important role in motivating most of the participants to undergo a mammography screening, and were viewed as an important source of information regarding the benefits of screening mammograms, and breast cancer risk.

However, the media presentation and discussion of issues sometimes lacks accuracy and thoroughness. Wells et al. (2001), who explored the way mammography screening is reported in newspapers, identified that newspapers tend to over-represent support for mammography screening for women aged 40 to 49 years and less often keep the balance in relation to the mammography screening debate. In particular, Wells et al. (2001) conducted a cross-sectional descriptive study among six high-circulation U.S. newspapers between 1990 and 1997. Interestingly, it was identified that media supported and encouraged participation in mammography screening more particularly for women aged 40 to 49 compared to other age groups. Additionally, 31% of the articles presented information without citing a source or justification (Wells et al., 2001). This means that there is a need for better cooperation between health care

professionals and the media regarding the presentation of information on screening and the early detection of breast cancer (Wells et al., 2001).

On the other hand, despite the information provided by the mass media, personal communication with health care providers and women seems to be of greater importance in relation to decisions concerning screening (McCaul and Tulloch, 1999). Physician's interventions produce higher mammography participation rates than either media or comprehensive community campaigns, by providing face-to-face information and giving suggestions to women (Clover et al., 1996). Information provided through the media and internet can change consumer and patient behaviour (Rimer et al., 2004), however, there may be various misunderstandings associated with these media. Such misunderstandings could be due to the low quality of information provided through media, contrary to the higher quality of information provided through face-to-face consultations with doctors (Schwandt, 1997).

Clearly, all of the aforementioned factors, including psychological, demographic, and informative factors could influence women's breast screening behaviour. However, an in-depth investigation is needed to reveal those factors responsible for Greek women's behaviour, and to identify the nature of their influence. However, focus should be made on the individual needs women have, since these may differ among them.

#### **2.4.4 Older Women and Their Decision Making on Mammography Screening**

Depending on the age of each woman, their needs for mammography screening change. Interestingly, older women have been identified as being in need of recognition regarding mammography screening. According to Rimer et al. (2004), most of the cancer-screening decisions in older adults cannot be answered solely by quantitative estimates of benefits and harmful results. Interestingly, depending on the individual health history of each woman, continuing mammography screening after the age of 69 years may result in a small gain in life expectancy and is moderately cost-effective (Kerlikowske et al., 1999). Kerlikowske (1999) compared life expectancy and cost-effectiveness of mammography screening in elderly women using decision analysis and cost-effectiveness analysis, approaching the general

population of women aged 65 years or older (Kerlikowske et al., 1999). Kerlikowske (1999) found that women's preferences for a small gain in life expectancy and the potential harms of mammography screening should play an important role when older women are deciding about screening. Therefore, mammography screening utilization by women over the age of 69 depends on their general needs.

Individual patient characteristics, such as their current physical or psychological illnesses and needs or functional status, may change the likelihood of receiving beneficial or harmful results from mammography screening. Indeed, what is often forgotten is that in older patients, some of the greatest harms from screening occur by finding and treating cancers that would never have become clinically significant (Walter and Covinsky, 2001). Therefore, physical harms, along with psychological distress caused by cancer screening, may be substantial for some older patients and caregivers. Interestingly, potential psychological harms range from the emotional pain of a diagnosis of cancer in patients whose lives were not extended by screening, through to the alarm of false-positive results and the stress of undergoing the screening test itself (Walter and Covinsky, 2001). Thus, as Walter and Covinsky (2001) supported throughout their overview on cancer screening in older patients, considering factors that increase the likelihood of harm is vital to making appropriate screening decisions. This is due to individual variability in health status and disability increase with age (Walter and Covinsky, 2001). Therefore, more individualized information provision is essential for this age group. In addition, a more individual-focused investigation is necessary in order to better understand the factors that influence women's decisions to participate or abstain from mammography screening.

To conclude, one consequence of these various factors is the reluctance of women to undergo annual mammography screening. Research reviewed in the last two sections emphasizes the interesting behaviour of Greek women towards mammography screening utilization. In other words, many Greek women appear to abstain from mammography screening. A typical example is their low engagement in the programme of free mammography screening, which was carried out by the Municipality of Athens (Section 2.2.1.5). The aforementioned factors could be part of the explanation as to why Greek women abstain from mammography screening, such as the influential role of psychological issues, media, cultural and demographic

characteristics as well as health care providers' role. Nevertheless, the unwillingness of Greek women to be examined for breast cancer and the unacceptably low numbers of early diagnoses may be partly due to deeper causes, such as Greek culture. Therefore, it is important to explore the issues and inferences associated with Greek women's decision whether or not to attend mammography screening. In order to facilitate such an exploration and examination we need to understand more about theories of health behaviours and the various models that have been developed in order to facilitate understanding of and interventions in relation to changing health related behaviours.

## **2.5 Screening-Health Behaviour and Mammography Screening- a Theoretical Framework**

The factors that could possibly affect mammography screening behaviour have been previously presented and analyzed, concluding with the need for an in-depth investigation in relation to those factors that influence Greek women. In order to improve our understanding of these factors, health behaviour theories and models, with particular focus on how they relate to screening behaviours, are presented and critiqued in this section. The use of such health behaviour theories and models aims to assist any investigation of the phenomenon of breast screening, to offer further explanation of the factors that influence breast screening behaviour and to better understand their role and possible interactions among them. One of the models was identified as of particular relevance to this study and was utilized in the first instance to guide it and to influence the formation of the questionnaire and interviews.

### **2.5.1 Health Behaviour Models and Theories**

Screening behaviour is complex and influenced by correlated factors that account for individual differences in the performance of health behaviours (Section 3.4 - subsections 3.4.1 to 3.4.4.2). Adersen and Newman (1973) reported that both individual and environmental factors could be associated with screening behaviour. In other words, the factors associated with screening behaviour tend to be complex, which makes it difficult to separate their independent effects; some factors may change over time, and there may be selection bias or reciprocal relationships between variables (Phillips et al., 1998).

There are a variety of theories and models through which health behaviours can be explained and understood. These include the Health Belief Model (HBM), the Theory of Reasoned Action, the Theory of Planned Behaviour (TPB), the self-efficacy model, the Social Cognitive Theory (SCT) and the Transtheoretical Model of behaviour change (TTM). Such models and theories and their association with mammography screening and the aim of this study are presented and critiqued below. Despite there being numerous models and theories, following extensive reading a pragmatic decision was made to focus on a discrete selection that appeared most relevant to the focus of this study.



### **2.5.1.1 The Health Belief Model (HBM)**

The Health Belief Model attempts to conceptualise two types of health beliefs that influence behaviour in response to illness. Based on the HBM, health behaviour is a function of the perceptions an individual has of vulnerability to an illness and the perceived potential effectiveness of treatment with respect to deciding whether to seek medical attention (Elder et al., 1999). Conner (2002) added that the particular health-related action each individual selects to follow is determined by the evaluation of the possible alternatives. In other words, the HBM maintains that health-related behaviours are determined by whether individuals perceive themselves as susceptible to a particular health problem (Elder et al., 1999). For example, perceiving something as a serious problem, individuals can be convinced that treatment or prevention activities are effective, yet not overly costly in terms of money, effort, or pain, and thereby they can be induced to take a health action (Elder et al., 1999). Thus, the HBM states that individuals will engage in a health behaviour if they perceive themselves to be susceptible to a disease and believe that there are few barriers to adopting such a health behaviour (Rosenstock, 1990). This means that according to the HBM people adhere to health behaviour only if they feel threatened by a health problem. This, however, is a disadvantage of the HBM, due to its selective focus only on individuals' beliefs and perceived risk of developing a health problem, not taking into account any social norms. Such a disadvantage was the main reason for rejecting the HBM to be used in this study's theoretical framework.

In terms of breast screening, particularly mammograms, a variety of research studies have adapted and tested the Champion's Health Belief Model Scale (CHBMS) (Parsa et al., 2008; Mikhail and Petro-Nustas, 2001) or used the HBM as their theoretical framework (Yu and Wu, 2005). All of them were quantitative studies and tested possible factors that could influence women's mammography screening behaviour. Parsa et al. (2008) conducted a cross-sectional quantitative study among female secondary school teachers in the state of Selangor, Malaysia. Through their study, they aimed to test the validity and reliability of the Champions's Health Belief Model Scale (CHBMS) for breast cancer screening in Malaysian women. They also aimed to measure health beliefs about breast cancer by the use of the above scale, with the use of a questionnaire as a measurement tool, having firstly specified the possible factors that influence women's behaviour. Thus, contrary to the aim of this study, which was

to identify the factors that influence women's behaviour towards mammography screening, Parsa et al. (2008) used the CHBMS for the measurement of already identified factors that could influence women's beliefs towards breast screening. Similarly, Mikhail and Petro-Nustas (2001) adapted and tested the CHBMS in order to measure Jordanian women's beliefs about breast cancer and breast screening examinations. Using a cross-sectional survey with a random sample of 519 female university students and employees in Jordan, Mikhail and Petro-Nustas (2001) supported the validity and reliability of the tool (CHBMS). The particular tool was found to be important for further planning and testing interventions to improve breast screening beliefs and screening behaviour. Using a similar quantitative approach, Yu and Wu (2005) also conducted a research study by using the HBM as their theoretical framework. Yu and Wu (2005) explored the reasons why women participate or abstain from mammography screening by the use of 206 questionnaires distributed to Chinese American women aged 40 and older.

Clearly, all of the above studies tested the already specified possible factors that influence women's beliefs in relation to breast cancer and its early detection by using the HBM. On the contrary, the attempt of this qualitative study was to explore Greek women's mammography screening behaviour and the unknown factors that influence it, without particularly focusing only on women's intention, which is the main characteristic of HBM. Thereby, for the purpose of this study, the HBM would not be useful to guide the construction of the study.

#### **2.5.1.2 Theory of Reasoned Action (TRA)**

Similar to the Health Belief Model, the Theory of Reasoned Action (TRA) places more emphasizes on the individuals' intentions to perform a particular behaviour. Based on the TRA, the intention has a core role through the attempt to explain and explore health behaviours. Such an intention can be predicted by a person's expectations regarding outcomes of behaviour, attitudes toward the behaviour and normative beliefs the person has (Elder et al., 1999; McCaul and Tulloch, 1999). In other words, the TRA is a function of individual attitudes and subjective norms regarding the behaviour (Ajzen and Fishbein, 1980). Subjective norms are determined by perceptions of what members of a particular social network think of the behaviour, and how this influences motivation to comply with the expectations of others (Carter,

1990; Azjen and Fishbein, 1980). The combination of individual and normative beliefs in the TRA is an advantage of this particular model, however, such beliefs are used to explain intention for a health behaviour rather than the health behaviour itself. Therefore, similar to the HBM, since Greek women's mammography screening behaviour was attempted to be explored in a holistic way, the TRA was not accounted as appropriate for this study's theoretical framework either.

In association with breast screening, particularly mammograms, the TRA has been used mainly in quantitative research studies as a theoretical framework. In Savage and Clarke's (1996) research study, the factors that influence participation in breast screening were assessed using a theoretical framework that derived from the TRA and the HBM. Savage and Clarke (1996) explored the possible association between the factors that influence intentions to have a mammogram and the factors that influence the intention to undertake Breast Self-Examination (BSE). Telephone interviews using structured questionnaires were conducted with 170 women aged between 50-70 years, who were randomly selected from the telephone directory of a provincial city in Victoria, Australia (Savage and Clarke, 1996). The components of the HBM were used to present the attitudinal factor of the TRA in addition to maintaining the TRA's subjective norm or social influence factor. Their findings supported their prediction that different variables would be associated with each of the breast cancer's early detecting methods. Intentions to have a mammogram were associated with perceived susceptibility to breast cancer, knowing a woman who had a mammogram, previous mammography history and Pap Test history (Savage and Clarke, 1996). Thus, contrary to the purpose of this study within the Greek context, the TRA was used in a quantitative study, were possible influential factors towards mammography screening had already been predicted and they were further tested.

Other researchers have also used the TRA in combination with the HBM for the conduct of mainly quantitative studies that explored the factors that influence mammography screening participation. A further example is the study of Soskolne et al. (2007), in which 510 female Muslim Arab Israeli citizens, aged 50-69 were interviewed face-to-face regarding the factors that influenced their mammography screening behaviour. For the conduction of these interviews, structured questionnaires were used, lasting 20 minutes (Soskolne et al., 2007). Components from the HBM and

the TRA were employed, in order to incorporate the group norms and behavioural intention of the TRA in their study, since the HBM has been criticised for its relative neglect of social factors and social norms (Soskolne et al., 2007). Such a combination of both behavioural models and emphasis on the TRA was claimed to be relevant for understanding screening behaviour in the traditional population of ageing Muslim Arab women in Israel (Soskolne et al., 2007). However, the study of Soskolne et al. (2007) was based only on the cultural and ethnographic characteristics of women as being possible factors for their breast screening behaviour. This contradicts the focus of this study, which aims to investigate Greek women's mammography screening behaviour and the factors that influence it in a holistic way. In addition, few studies of mammography screening were based on the TRA, and few have identified it as a useful model, due to its focus on the variance of intentions and not on the actual behaviour (Soskolne et al., 2007). Clearly, the TRA, as with the HBM (sub-section 2.5.1.1), could not be used in qualitative studies that aim to explore the factors that influence mammography screening behaviour with no limitations regarding the possible factors. Therefore, both the HBM and the TRA were not selected for this study's theoretical framework.

### **2.5.1.3 Theory of Planned Behaviour (TPB)**

The Theory of Planned Behaviour (TPB), developed by social psychologists, has also been employed as a tool to aid the understanding of various behaviours, including health behaviours (Godin and Kok, 1996; Ajzen, 1991). The TPB details how the influences upon an individual determine their decision to perform a particular behaviour. More specifically, based on the TPB, individuals' intentions represent a person's motivation (Conner, 2002). Within the TPB the determinants of behaviour are intentions to engage in that behaviour (Conner, 2002). Thus, similar to the HBM and the TRA, intention rather than the actual behaviour is the main priority.

Due to its particular focus on individuals' intentions, the TPB has some disadvantages. It supports the view that individuals' intentions are determined by three variables. These include attitudes, subjective norms and personal control, which in turn are determined by underlying beliefs (Conner, 2002). Thereby, exploration of health behaviours based on the TPB focuses on the beliefs individuals engage in by performing particular health behaviours. This is a disadvantage of the TPB due to its

limited focus on particular elements of behaviour; peoples' beliefs and the factors that perform them. A further limitation of the TPB is that the particular theory stipulates that environmental processes are relevant only insofar as they influence the beliefs that predict intention (Pasick and Burke, 2008). This is possibly because its central construct is intention, regarded by the theory as the most important and proximal determiner of behaviour (Pasick and Burke, 2008). Thereby, due to the limited focus of the TPB, similar to the HBM and the TRA, it did not follow the purpose of this study, and thus, it was not selected for this study's theoretical framework.

Various researchers have used the TPB as their theoretical framework in relation to work examining factors that influence mammography screening behaviour (Pasick et al., 2009; Tolma et al., 2006a; Drossaert et al., 2003). However, most of them have focused on women's intention towards participating in mammography screening, rather than what is influencing their breast screening behaviour. In the cross-sectional survey of Tolma et al. (2006a), the applicability of TPB with the addition of self-efficacy model was examined, in an attempt to understand the motivation for undergoing initial mammography screening among Cypriot women. The sample of Tolma et al. (2006a) study comprised of 293 women aged 40-65 years, who were asymptomatic of breast cancer and with no previous mammography screening experience. According to Tolma et al. (2006a), predictors of intention for starting participation in mammography screening included educational level, time of last clinical breast examination and age. Nevertheless, a limitation of Tolma et al.'s (2006a) study was its convenient sample. In addition, their findings were only related to the factors that lead women to participate in breast screening and not those also related to their abstinence, as this study aimed to investigate within the Greek context. Moreover, self-efficacy model was also used for the understanding of the above findings, due to the TPB's disadvantage of focusing only on the intention of adopting a health behaviour (such as mammography screening).

In addition, Pasick et al. (2009) used the TPB as a theoretical framework in order to investigate the factors that influenced mammography screening behaviour. Screening was associated with trying to act on the beliefs of a woman's sister and doctor but not of her best friend, mother, or husband (Pasick et al., 2009). Pasick et al. (2009) argued that the TPB has been used so far to focus many research studies on a limited set of

social roles, or people who are presumed to be significant others, such as mothers, husbands, and sisters. However, others may be strong influences on women's behaviour, such as peers who had breast cancer (Pasick et al., 2009). Thus, it could be assumed, as has also been supported by Pasick et al. (2009), that by using the TPB as a theoretical framework, there is a weak performance in predicting intention compared with attitudes and control beliefs. Therefore, for the purpose of this study, such a disadvantage of the TPB was a further reason for its rejection.

#### **2.5.1.4 Self-efficacy model and Social Cognitive Theory (SCT)**

Differentiating from the Theory of Planned Behaviour (TPB), self-efficacy is another model which focuses on beliefs and the way these influence health behaviours. In particular, the self-efficacy model is often presented as one of the most powerful predictors of health behaviour (Bandura, 1997; Schwarzer and Fuchs, 1996), and can be conceptualised and measured in terms of three parameters. These are magnitude, strength and generality, with emphasis given to the strength parameter (Bandura, 1997). Based on the self-efficacy model, individuals believe that adopting the new behaviour will reduce the threat to their health, and that they are capable of performing the behaviour (Conner, 2002).

A number of studies have used the self-efficacy model either singly or in combination with other models (Tolma et al., 2006a; Povey et al., 2000; Armitage and Conner, 1999). The health behaviour being studied varied, and included alcohol use, food choices and mammography screening. In these studies, self-efficacy referred to the level of perceived ability to perform a particular behaviour and overcome the barriers to achieve that behaviour (Bandura, 1986). Most were quantitative studies, testing and measuring the strength of influencing factors towards the adaptation of a health behaviour or cessation of an unhealthy behaviour. Nevertheless, the disadvantage of the self-efficacy model is its limited focus on specific factors; the level of perceived ability to adopt a health behaviour. Such a limitation is the reason the above model has been mainly used to assist the understanding of the research question in quantitative studies. It could thereby be assumed that the self-efficacy model could not be useful in this study, where the aim is to investigate the general factors that influence mammography screening behaviour and not only concentrate on Greek women's ability to adopt mammography screening.

The self-efficacy model has its origins in Bandura's Social Cognitive Theory (SCT), which states that behaviour is a function of both incentives and expectancies (Conner, 2002). The SCT refers to interactions among social network members, which provide opportunities for role modelling, observational learning, and positive reinforcement for behaviour change (Perry et al., 1990; Bandura, 1986). These experiences, in turn, influence expectations regarding the outcome of health behaviours, as well as self-efficacy regarding the behaviour. Thus, the SCT could be used to understand the breast screening behaviour itself and the factors that influence it. However, the SCT's limited focus is on the factors individuals receive only from their interaction with their social networks. Thereby, the SCT in combination with other theories has fared better than it would have had it been used on its own (Allen et al., 2008). Thus, since the aim of this study is to investigate all of the factors that influence Greek women's mammography screening behaviour, not only those associated with women's social networks, the SCT could not be used as a guide to this study's construction.

#### **2.5.1.5 Transtheoretical Model of behaviour change (TTM)**

The Transtheoretical Model of behaviour change (TTM) is a multilevel, psychologically-based model, based on the presumption that different individuals are at different stages of considering or adopting a specified health-related activity or health promoting behaviour (Kelaher et al., 1999). It is comprised of three main concepts. It integrates current behavioural status and intention to change behaviour (stages of change); perceptions of the reasons for and against behaviour change (pros, cons and decisional balance); and strategies that can be used to promote behaviour change (processes of change)(Maxwell et al., 2006; Rakowski et al., 1996). Its advantage is that it allows for a range of positive and negative attitudes that may or may not include constructs of other behavioural models (such as the HBM), which are perceptions of benefit, severity, or susceptibility (Pasick and Burke, 2008).

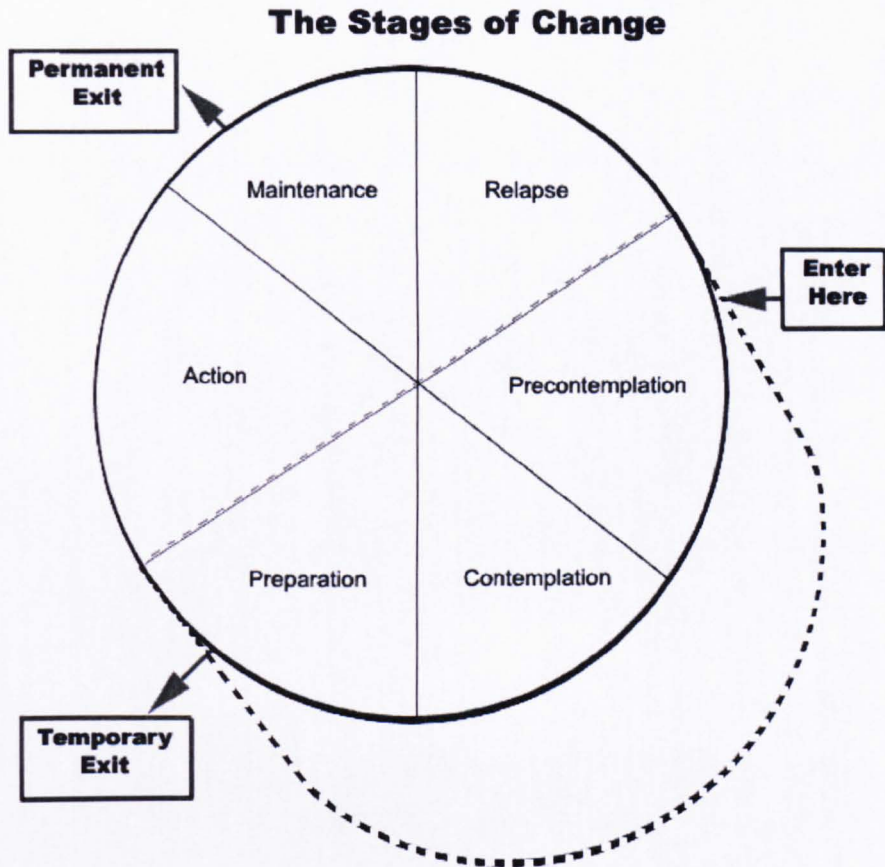
Another advantage of the TTM is that it emphasizes that interventions can be matched to the needs of each individual, and this distinguishes it from the models and theories already presented (Conner, 2002; Pasick and Burke, 2008). Clark et al. (1996) maintain that such a patient-centred approach is more likely to yield beneficial results in health-behaviour change efforts. Thus, some attempt should be primarily made to firstly determine what behavioural stage individuals are at. A number of researchers

have suggested that there may be different stages in the initiation and maintenance of health behaviour (Clark et al., 1996). Thereby, in order to obtain a full understanding of the determinants of health behaviour, it is necessary to conduct a detailed analysis of the nature of these stages (Clark et al., 1996). One of the first stage models was put forward by Prochaska and DiClemente in their Transtheoretical model of behaviour change (TTM) (Clark et al., 1996).

Behaviour change (both the cessation of risky behaviour and the adoption of healthy behaviour) involves progression through a series of stages. Movement between these stages is influenced by elements of decision making regarding the adoption of the new activity. In particular, perceived positive aspects are weighed against perceived negative aspects, with the resultant “decisional balance” influencing the process of change in one direction or another (Kelaher et al., 1999). In its most widely applied form, Prochaska et al. (1992b) identified five stages of change: i) precontemplation (currently not doing, and not intending to adopt, the target health practice); ii) contemplation (currently not doing, but considering adoption of the practice); iii) preparation (intends to take action within the next days and has taken some behavioural steps in this direction); iv) action (the initial phase of adopting the new behaviour); and v) maintenance (sustaining the change over time). Elder et al. (1999) proposed that the precontemplation stage could be divided into unawareness (unaware that the particular behaviour is unhealthy) and uninvolvement (accepts that the particular behaviour needs to be changed but does not perceive the problem as salient). Consequently, the stages of the TTM are based upon an integration of past and current behaviour, and also of future intentions (Conner, 2002), while their variation depends upon the particular health related behaviour investigated.

Recent additions to the stages of change account for variations in past behaviour and for individuals who are at risk of ceasing the particular health behaviour (risk for relapse stage) or have already ceased the activity and do not intend to adopt it in the future (relapse)(Maxwell et al., 2006; Kelaher et al., 1999). More specifically, within Maxwell et al.’s (2006) findings, the predictive validity of the TTM stages of mammography adoption construct and the inclusion of both relapse and relapse risk categories to improve the sensitivity of the predictive model are supported. The stages of the TTM are presented in Figure 2.





**Figure 2:** Stages of the Transtheoretical Theory of behaviour change

Source: [http://www.mcf.gov.bc.ca/publications/privacy\\_charter/pfwg\\_body.htm](http://www.mcf.gov.bc.ca/publications/privacy_charter/pfwg_body.htm)

Ministry of Children and Family Development (Canadian Ministry of Children and Family Development, 2007)

Apart from the stages of the TTM, decisional balance comprises another important concept of the TTM. The stages of the TTM are the most directly observable and readily measurable elements of the TTM, in so far as they are grounded in actual behaviour (Rakowski et al., 1996). However, it is necessary to understand what promotes movement from stage to stage (Rakowski et al., 1996). In this regard, equally important elements of the TTM are the pros, cons and processes-of-change. The pros and cons denote perceptions about the positive (pros) and negative (cons) aspects of the target behaviour and of trying to change (Rakowski et al., 1996). Such positive or negative aspects therefore highlight the reasons a person has for wanting to

change and the reasons for not wanting to change. The pros and cons can be based on knowledge, attitudes, personal experience, the experiences of others, and feelings such as fear, anxiety and self-image (Rakowski et al., 1996).

Decisional balance is a summary index derived from the pros and the cons (Racowski's scale model), that denote perceived pros and cons of the target behaviour. More specifically, the model of Racowski's scale (Chamot et al., 2001) hypothesizes that people in action and maintenance have a positive decisional balance (pros > cons), and that people in precontemplation have a negative balance, reflecting perceived reasons not related to change (cons > pros). Moreover, people in contemplation have a decisional balance that falls between precontemplation and action, and are expected to be closer to the neutral or zero point of equal pros versus cons. Finally, persons experiencing relapse are expected to have a decisional balance between precontemplation and contemplation (cons > pros).

#### **2.5.1.6 Empirical research studies on mammography screening and the TTM**

Even though the TTM was originally proposed by Prochaska and DiClemente in the context of smoking cessation, it has been applied to several other health behaviours (Prochaska et al., 1994). During the 1990s, the model was adapted and applied to understanding cervical cancer screening behaviour (Rakowski et al., 1998; Rakowski et al., 1992) and since then it has been applied to numerous studies which aimed to explore and understand mammography screening behaviour (Spencer et al., 2005; Stoddard et al., 1998; Rakowski et al., 1997; Rakowski et al., 1996).

One of these studies conducted by Rakowski et al. (1997) extended prior research to apply the decision-making constructs of the TTM to mammography screening behaviour. Rakowski et al. (1997) supported the associations between readiness to obtain screening (i.e., stage of adoption) and opinions about mammography (i.e., decisional balance). Rakowski et al. (1997) further noted that positive (pros) and negative (cons) perceptions about mammography screening test could be distinguished as separate constructs on the basis of an initial principal components factor analysis with the developmental sample. In addition, women who stopped participating in this test (relapse stage) appeared to be starting the decision process at

a point similar to women who have never had a mammogram (precontemplation stage) (Rakowski et al., 1997).

However, Rakowski et al.'s (1997) investigation had several limitations. In particular, even though the sample was large (8,914 community-living women who completed the baseline telephone interview) and from different geographic regions, the majority of participants had an advanced level of education (Rakowski et al., 1997). Additionally, whether stage of adoption should be based on subjective reports of screening history or on data from patient records was located outside of Rakowski et al.'s (1997) investigation objectives. Finally, the study of Rakowski et al. (1997) aimed only to apply conceptual models that can organize community based and clinical interventions in ways that are responsive to a mix of already identified factors. Therefore, it is recommended that future research examine whether opinions regarding the cons of mammography are more individually specific than the pros, through using a more in-depth qualitative approach.

The TTM has also been utilised in a variety of research studies, to examine the inhibitors to, and facilitators of breast cancer screening. Chamot et al. (2001) conducted a research study based on the TTM in an attempt to assess its predictions of behavioural change applied to mammography screening in a random sample of 909 Swiss women aged 40–80 years, from which 46.9% adopted on-schedule mammograms and 53% abstained from the particular breast screening test. The survey examined stages of mammography adoption, positive and negative attitudes toward screening (pros, cons and decisional balance), and additional predisposing, enabling and reinforcing characteristics (Chamot et al., 2001). Through the findings of Chamot et al. (2001) it is claimed that constructs other than pros and cons may be useful in predicting mammography use. By analyzing the received data, Chamot et al. (2001) emphasized the existence of uniform relationships between the covariates and stages of adoption across a sequence of stages (Chamot et al., 2001).

The research study of Chamot et al. (2001) was characterized by several strengths, including its reliance both upon analyses that contrasted several stages of adoption and pair-wise analyses comparing adjacent stages. More specifically, each strategy identified sets of predictors of mammography adoption that overlapped only partially

and enlightened unique aspects of the relationships between predictors and stages of adoption (Chamot et al., 2001). Nevertheless, the work also had several limitations, since it was a quantitative research study based on women's replies to mail questionnaires. This means that more in-depth information could have been revealed through a qualitative approach. Moreover, since the respondents and non-respondents differed in their demographic characteristics, non-respondents were probably less likely to have favourable attitudes towards mammography and to actively engage in screening (Chamot et al., 2001). As a consequence, Chamot et al. (2001) commented that their results may be overly optimistic, and thus further research is needed.

A further study of Pearlman et al. (1997) used the TTM as part of its theoretical framework. Pearlman et al. (1997) examined women's decision making about mammography over a one-year period, using "decisional balance," a summary of women's positive and negative perceptions about mammography derived from TTM. The data collected was from a survey of women aged 50-74 years who had been recruited randomly and who completed both the baseline and one-year follow-up telephone surveys, as part of an intervention study which aimed to increase the use of mammography screening (Pearlman et al., 1997). The research study of Pearlman et al. (1997) aimed to extend current knowledge in two ways. Firstly, longitudinal analyses were used to investigate women's perceptions about the positive and negative aspects of mammography and how the balance between the two (decisional balance) changed over the first year. Secondly, the conceptualization of the information from the environment included a woman's information-seeking style, as well as her perception of herself as a disseminator of mammography-related information (Pearlman et al., 1997).

Pearlman et al. (1997) emphasized that an understanding of the total information derived from the environment of women may enhance intervention strategies aimed at improving physician-patient communication about breast cancer screening. Consequently, based on the results of the particular research study, change in women's attitudes toward mammography was related to the communication they had with their health care providers. Therefore, Pearlman et al. (1997) concluded that the influence of the information derived from the environment has important implications for improving physician-patient communication about breast cancer screening.

Therefore, future research should include both the giving and receiving of health-related information and advice as important determinants of women's attitudes toward mammography and, ultimately, those who seek screening. Nevertheless, such an attempt regarding the advancement of information and health consultation women receive about mammography screening demands an investigation based on a qualitative framework. Such a qualitative research would aim to explore in more depth the factors that influence women's abstinence from or participation in mammography screening.

Finally, even within recent research studies, the Transtheoretical Model of behaviour change has been used as a guide to the development of the interventions promoting breast cancer screening. Such a study was that of Wu and West (2007), wherein 47% of female participants were in the maintenance stage. On the other hand, 35% of the women in both the precontemplation and contemplation stages had never had a mammogram, while 12% belonged to the relapse stage. However, with regard to factors leading to women's particular behaviour, they were all provided to women as choices within a structured questionnaire. This suggests that women's answers were guided in the study of Wu and West (2007), without giving them the chance to express the factors that they perceived as influential towards their mammography screening behaviour.

To conclude, the TTM has been proved a helpful guide to a variety of studies which aimed to investigate the influential factors towards mammography screening, in order to apply interventions promoting mammography screening. However, most of them were conducted using a quantitative method, focusing on pre-identified factors. Therefore, a more in-depth investigation is needed on the in-depth factors that influence mammography screening behaviour, using the TTM as a guidance. Such an investigation was conducted in this study, within the Greek context.

#### **2.5.1.7 Selection of the TTM as part of this study's theoretical framework**

When considering how the aforementioned models and theories might usefully be employed in a study of Greek women's perceptions, experiences, and behaviour in relation to mammography screening, a number of issues were considered. The TTM appeared to be more appropriate for this study because it is designed not only to

facilitate in holistically investigating the factors that influence mammography screening behaviour, but also to provide useful interventions in promoting a health behaviour (such as mammography screening). The main reason for rejecting the HBM, TRA, TPB, Self-Efficacy Model and SCT in influencing the construction of this study was that their main focus is on the intention of adopting a health behaviour rather than on the health behaviour itself. All of the aforementioned health-related models and theories have been used in a variety of health behaviour studies as a basis to identify the most appropriate interventions that could possibly change harmful health behaviours, or aid the maintenance of a health preventive behaviour. However, it is not fully accepted that such theory-based interventions can produce effective and long-lasting behavioural change that will lead to real health benefits for all individuals (Conner, 2002). In other words, since there are different behaviour stages each individual belongs to throughout their process to adopt a health behaviour (Conner, 2002), they have different needs and they are influenced by different factors. Therefore, as also supported by the TTM, different interventions should be applied depending on women's needs.

Compared to the rest of the theories and models, only the TTM focuses on interventions based on the different behaviour stages women belong to. The intervention strategies that emanate from the HBM, TPB and Self-Efficacy Model are predominately knowledge- and information-based, focussed on the individual, with less focus on the importance of context and on a qualitative understanding of behaviour (Pasick and Burke, 2008). The interventions that emanate from the TRA are mainly focussed on the normative beliefs women have. Also, the interventions that arise from the use of the SCT are based only on the influences women have from their social network. On the other hand, the interventions arising from the use of the TTM are based on individuals' different needs, depending on the behavioural stage they belong to. The stages of TTM are of great importance for the adoption of healthy behaviour, since it has been shown that individuals who leap to action without adequate contemplation or preparation are at high risk for relapse (Prochaska et al., 1992a). In addition, Rakowski et al. (1993) emphasized that there is a strong association between individual's stages of adopting a health behaviour and elements of decision-making regarding the particular behaviour. Thereby, for the purpose of this study, the TTM was selected from the rest of the models and theories to be used

as a guide in the construction of the questionnaires and interviews used. The use of the TTM also assisted in understanding the multiple and varied factors that influence women in relation to their mammography screening behaviour, but also in proposing appropriate interventions for different groups of women. Nevertheless, elements of some of the above models and theories were also used after the data analysis in order to facilitate an understanding of the findings.

Despite the complexity that characterises the TTM, its use aimed to provide a useful framework in this study. According to Prochaska et al. (1992b) simplicity is not parsimonious when it cannot accommodate the complexity of human behaviour change. Thereby, complex models, such as the TTM, could be more appropriate to explore human health behaviours. Prochaska et al. (1992b) concluded that it is unrealistic to expect that simple theoretical models will survive.

The use of TTM also attempted to identify the necessary interventions that could encourage Greek women to participate in mammography screening. Trauth et al. (2003) concurred that within the appropriate application of the TTM, increased compliance rates to mammography screening utilization could be postulated. According to Pearlman et al. (1997), a significant challenge for academic research is to give health care professionals guidance regarding information that is important to elicit from women in order to assess readiness and motivation for breast cancer screening and to determine how to effectively intervene with those who are reluctant. In other words, due to the fact that physician's recommendation is one of the strongest predictors of mammography use (Sutton and Doner, 1992; Coll et al., 1989), primary care physicians are being encouraged to regularly counsel patients about early detection of cancer (Pearlman et al., 1997). Nevertheless, the actual factors and obstacles Greek women confront within their decision of whether or not to engage with mammography screening had to be initially explored in order to understand and further identify the actual social organisations and health care providers who could possibly take action.

Despite the aforementioned justification for selecting the TTM as part of this study's theoretical framework and its use by a variety of other studies already presented, a primary consideration was whether the TTM should be applied to mammography

screening in the first place. Due to the fact that the TTM was originally developed for supporting smoking cessation behaviour, there was a dilemma regarding its appropriateness in adopting it to explore and understand mammography screening behaviour. According to Rakowski et al. (1996), smoking has been approached from the standpoint of cessation or prevention of starting, while mammography is a behaviour which women need to initiate and maintain and not cease. Therefore, more attention should be paid to interventions designed to stop behaviours counterproductive to mammography screening, not just starting the desired one (Rakowski et al., 1996). The successful use of the TTM in a variety of studies (section 2.5.1.6) confirmed the TTM's appropriateness in investigating mammography screening behaviour and thereby its appropriateness within the Greek context.

Further provisos in order for the TTM to be applied are that there must be reliable and safe technology for intervention, the target behaviour must have volitional elements, and there should be clear behavioural guidelines for performance given by a specific target population (Rakowski et al., 1996). Two of these criteria seem to be sufficiently satisfied. The quality of screening technology has improved greatly over the last two decades, which consequently minimizes adverse outcomes due to poor technology (Rakowski et al., 1996). With regard to the volitional features of the target behaviour, Rakowski et al. (1996) observed that the TTM relies on personal motivation and decision-making. Hence, the mammography screening behaviour fulfils these criteria in many aspects.

To conclude, the TTM has been selected among a number of models and theories to be used as a guide for the conduct of this study. Its main advantage of focussing on interventions based on different behavioural stages distinguishes it from the rest of the models and theories and commends it for this study.



## **2.6 Conclusions - Further Research**

As presented and analysed in this chapter, the aim of breast screening is to reduce mortality from breast cancer by early detection and management of abnormalities. A key factor in reducing mortality is to achieve and maintain high levels of regular participation in the mammography screening test. Despite the various debates on the efficacy of this test in relation to mortality rates reduction, the official global recommendations for mammography screening support its use. Therefore, in order to maximise participation in breast screening, it is important to identify and meet the needs of women, as well as understand more about what leads them to their breast screening behaviour. Table 1 includes a brief presentation and analyses of all the empirical studies included in the literature review chapter in relation to the mammography screening debate.

In Greece, the number of breast cancer incidences is substantially high and tend to be diagnosed at an advanced stage. This is accompanied by a significant number of women who abstain from mammography screening, resulting in increased mortality rates from breast cancer. There is manifestly a need to understand the phenomenon of breast screening within the Greek context. This will enable health care providers to develop ways of tackling Greeks' abstinence from mammography screening. Hence, an investigation of the factors that influence Greek women's mammography screening behaviour was conducted.

Greek women's experiences and perceptions in relation to mammography screening and cancer were also explored, to provide health care providers with important information on women's needs in relation to breast screening. According to Dobias (2001), it is crucial for providers to know about the nature and source of knowledge and attitudes about important health care topics that women bring to the clinical encounter. The particular knowledge gained could be used to improve clinical communication. This could be a more effective communication between women and health care providers (Dobias et al., 2001). Within such a communication, health care providers could not only tailor messages most appropriately to women's needs, but also to the needs of a wider community (Woolf and Dickey, 1999). By identifying

different needs women have, depending on the restrictive or encouraging factors towards mammography screening, coinciding interventions could be suggested.

Among a variety of behaviour models and theories, the TTM was selected to partly guide the conduction of this study and to facilitate in understanding its findings. The main reason for the TTM's selection was its focus on interventions based on women's different behaviour stages and thereby needs. Nevertheless, elements of other behaviour models and theories were also used for the better understanding of the findings. Table 2 briefly presents and analyses all the empirical work included in the literature review chapter, in relation to women's mammography screening behaviour, the factors that could influence such a behaviour and health behaviour models.

Details regarding the aim and objectives of this study are presented in the next chapter. Justification of the adopted methodological approach, research design and methods that were used to collect and analyze the data are also included in Chapter 3.

**Table 1:** A brief presentation and analysis of all the empirical studies included in the literature review in relation to the mammography screening debate.

Author/Year	Aims	Design	Methodology	Key Findings	Strengths/ Weaknesses	
<b>Duffy et al., 2002</b>	To evaluate the impact of organized mammography service screening on breast carcinoma mortality.	Randomized study	Quantitative approach	There was a 40-45% reduction in breast carcinoma mortality among women actually screened.	1)Data were collected from 7 Swedish counties. 2)Long observation times were included during the pre-screening and after screening epoch.	1)Data represented only the 33% of the Swedish population. 2)There could be a complex of reasons that influenced women's mortality rates, which were not investigated in this quantitative study.
<b>Jonsson et al., 2001</b>	To estimate the effect of the population based service screening programme in Sweden on mortality from breast cancer among women aged 50-69.	Randomized study	Quantitative approach	Mammography screening decreases the mortality of breast cancer in the age group 50-69. Such a reduction in mortality rates was estimated from 16-20%.	To adjust for geographical differences in mortality from breast cancer a reference period was used.	1)There was a small lead time bias 2) Other issues should also be taken into advance regarding the reasons that influence breast screening reduction (such as advancement of treatment procedures).
<b>Miller et al., 2002</b>	To test whether combined screening (with longer follow-up) of women aged 40-49 years with annual mammography and clinical breast examination lead	Randomized trial	Quantitative approach	Slightly fewer women aged 40-49 who had mammography screening on a regular basis died from breast cancer compared to the those women who were not screened.	Women were selected on a random base and were followed for 11-16 years.	The debate about mammography for women aged 40-49 continues. The controversy over randomization in such trials and the inferior quality of mammograms taken 20 years ago compared



Table 1 continued

	to a reduction in breast cancer mortality compared with a single breast examination and usual care thereafter.					with those obtained with more recent technology should be taken in account for the reliability of the findings.
<b>Vejborg et al., 2002</b>	To evaluate the early outcome of an organised mammography screening programme in an area with little opportunistic screening.	Randomized trial	Quantitative approach	Copenhagen is an area with a high incidence of breast cancer and with relatively little opportunistic screening. The start of a screening programme with a high recall rate in this area resulted in a detection rate above 1%.	A variety of measures were used, these being: rates of participation, recall, false positive, and cancer detection. Benign biopsy, distribution of tumour size, lymph node status, and malignancy grade.	The period of investigation in this study was between 1990-1999. During that period, the mammography screening programme may have changed as well as the technology used for the mammography screening test.
<b>Andersson et al., 1988</b>	To determine whether mortality from breast cancer could be reduced by repeated mammographic screening.	Randomized study and control groups	Quantitative approach	Invitation to mammographic screening may lead to reduced mortality from breast cancer, at least in women aged 55 or over.	21088 women being over 45years old were randomly invited for screening and 21 195 in control group.	The validity of causes of death other than breast cancer was not confirmed. it is difficult to use the results from one study to calculate the expected benefit in another population.
<b>Woloshin et al., 2000</b>	To learn how women interpret the mammography	Survey	Quantitative approach	50% reported being upset by the public disagreement among clinic experts. Most women suggested that	1)There was a satisfactory rate of participation in the survey (66%).	Even though one of the aims of this study was to measure the understanding of the



Table 1 continued

	screening debate for women 40-49.			mammography screening should begin before the age of 4, while 5% suggested a first mammogram should be performed at 50 years or older. Many believed that the debate was about money rather than the question of benefit.	2) A stratified random sampling strategy was used to oversample women of screening age (ie, aged 40 to 70 years) and women of low income.	source of the debate, the relevant questions included in the questionnaire were narrowed only on doctors and the conversations women had with them, instead of providing women with more possible sources of information. More information about this issue could be throughout a qualitative research study.
<b>Chamot and Perneger, 2001</b>	To assess accuracy of women's opinions about reduction in mortality from breast cancer attributable to mammography screening	Cross sectional survey	Quantitative approach	Only 19.3% of the respondents assessed screening efficacy realistically (that is, reduction by about one fourth); 52.0% overestimated efficacy; 26.0% "didn't know", and 2.6% stated that screening prevents no death. Women who believed mammography screening to be effective had more positive attitudes toward screening. Lack of opinion about the benefit of mammography screening was more common among women who had not consulted a gynaecologist recently, nor had had a mammogram during	1) The survey sample of 1400 was drawn at random from the official population registry. 2) The survey instrument was pre-tested on a sample of health workers and women from the target population	1) The final questionnaire was sent by mail, which is an impersonal way of approaching the sample. 2) Three reminders were posted to non-respondents, which could cause pressure to the sample. 3) Participants may wanted more issues to state apart from those provided through the questionnaire, but they did not had the chance to declare them throughout the





**Table 2:** Presentation and analysis of all the empirical work included in the literature review chapter, in relation to women’s mammography screening behaviour, the factors that could influence such a behaviour and health behaviour models.

Author/Year	Aims	Design	Methodology	Key Findings	Strengths/ Weaknesses	
<b>Zimmerman and Connor, 1989</b>	To explore several of the ways in which significant others, family members, friends, and co-workers, may affect changes in health behaviour.	Exploratory study	Qualitative study	Results provide support for the general hypothesis that one individual attempting to change health behaviour may be positively influenced by significant others during the course of the change process. Family members were particularly helpful, and overall supportiveness was more helpful than others' change in health habits or encouragement.	Self-reports of health behaviours were gathered at baseline and at the end of the 7-week program. This gave the opportunity to the researcher to compare and contrast the subjects' reports.	Subjects were asked to report the extent to which significant others generally supported health behaviour changes, encouraged them to maintain changes they had made, and made changes in their own health behaviours. Further issues could be revealed if the researcher had guided less the subjects' reports.
<b>Naska et al., 2005</b>	Description of the daily consumption of foods and beverages and the daily intake of energy and macronutrients of a sample of the general Greek population.	Survey	Quantitative approach	A large sample of the general Greek population are gradually departing from their traditional diet. Taking into consideration the dietary guidelines for adults of the Hellenic Ministry of Health, Greeks specifically consume more red meat, while their fruit and legume intake is lower than recommended.	A large number of Greeks were recruited in this survey (20,822) within a five year period.	Even though males were found to have different dietary habits compared to those of women, there was no other association among different ages and socio-economic groups.
<b>Mauri et al., 2009</b>	To estimate cancer screening coverage among a	Survey	Quantitative approach	The actual opportunistic screening approach presents important deficiencies with	1)A large survey that covered many Hellenic areas.	1)This survey could not uncover the reasons Greeks are not going



Table 2 continued

	large sample of Greek individuals.			displaced priorities in test performance and a low proportion of individuals undergoing recommended tests. Only 22.8% of the 7012 adults from 30 Hellenic areas had mammography screening within the last 2 years.	2) Representative findings to the Greek population. 3) A variety of preventing and early detecting tests were included.	for mammograms and other preventing and early detecting tests. 2) Deficiencies in test performance should be researched more in depth. The findings of this research do not necessarily from the findings of this study.
<b>Dimitrakaki et al., 2009</b>	This study estimated the rates of age-appropriate screening practices for breast, cervical, colon and prostate cancer within the general population in Greece and explored the influences of social factors on their use.	Cross-sectional survey	Quantitative approach	The percentage of the population in Greece receiving screening services recommended by the European Council is low and seriously affected by social factors. The percentage of women aged 50-69 years having received mammography was 53.8%.	This study had a representative sample. A high number of Greek people were approached (1005 adults, 16-69 years).	Social factors suggested as responsible for Greeks' low attendance to screening tests need further investigation. Social factors could differ among different age groups. Such factors and other possible reasons for the above phenomenon could be uncovered under a qualitative approach.
<b>Borgias et al. 1998</b>	To determine breast cancer incidence and the number of mammography screenings carried out between 1981-1991.	Survey	Quantitative approach	8.3% of cases of breast cancer were diagnosed through mammograms and effectively treated at an early stage. Lack of uniformity in the population of south-western Greece and thus the long distance from Oncology Hospitals and breast clinics	This was one of the first records of breast cancer incidences in rural areas in Greece and participation in mammography screening.	Long distance from breast clinics and oncology hospitals was only an assumption of the researcher and not the actual reason uncovered through this study. Further research under a qualitative



Table 2 continued

				located in big cities could be the reason for Greek women's abstinence from mammography screening test.		approach is needed to reveal the reasons for women's abstinence from mammography screening in rural areas.
<b>Achat et al., 2005</b>	To (1) identify associations between beliefs and knowledge about breast cancer and mammography, socioeconomic (SES) indicators, and health-related factors, and having a mammogram (a) ever and (b) within the last 2 years; and to (2) describe utilization of mammography.	Structured telephone survey	Quantitative approach	Strong positive associations were found between age, married/de facto relationship, knowledge about and belief in the benefits of screening, indicators of health status and service utilization, and whether women had had a mammogram or had one within the recommended period. Socioeconomic status was weakly associated with regularity of mammography. Most respondents (97.4%) reported having had at least one mammogram.	1) The large sample of women with address and telephone information was randomized and 6286 names were selected at random and provided to a market research company (MRC) for interview 2) The sample as provided to the MRC was exhausted and, to minimize the possibility of selection bias by excluding hard to find women, up to 10 attempts were made to contact each person 3) A pilot of 50 respondents identified necessary amendments, which were subsequently made to the questionnaire of the telephone interviews.	Limitations and disadvantages of telephone interviews: 1) Respondents may not have understood some of the questions and thus findings may not have been reliable. 2) Telephone interviews lasted only 10-15 minutes, and the findings gathered could not include further information respondents may wanted to state, apart from those included in the questionnaire.



Table 2 continued

<b>Nekhlyudov et al., 2003</b>	To study women's decision-making process regarding the procedure, because shared decision making has been recommended for screening mammography by women under age 50.	Exploratory study	Qualitative approach	All women had or intended to have a screening mammogram before age 50. They were motivated by the awareness of the recommendation to begin screening at age 40, knowing others with breast cancer, and a sense of personal responsibility for their health. Participants feared breast cancer and thought the benefits of screening mammography far outweighed its risks. Women's preferences for involvement in decision making varied from wanting full responsibility for screening decisions to deferring to their medical providers. All preferred the primary care provider to be the main source of information, yet the participants stated that their own providers played a limited role in educating them about the risks and benefits of screening and the mammography procedure itself. Most of their information was derived from the media.	1) This purposeful sampling technique was intended to maximize the diversity of opinions available in interviews and to explore potential differences among the subgroups. 2) Women were interviewed until no new content areas or themes emerged in each of the subgroups examined ("thematic saturation"). 3) Triangulation method was used in the analysis of the interview transcripts.	The sample was limited to women aged 38 to 45 on the basis of the assumption that women in this age group are most likely to be actively involved in the decision-making process regarding initiating screening mammography. However, it would be interesting to investigate women also being older than 45, since the majority of breast cancer incidences are detected after age 45. 2) Interviews were conducted by telephone, lasting too long (45minutes). The interviewer was not able to be advantage from a face to face interview (such as observation of body language). 3) The findings cannot be generalised to the whole population.
<b>Clover et al., 1996</b>	To test which of the recruitment strategies (of	Two Sequential randomized trials	Quantitative approach	In Trial 1, significantly higher attendance rates were observed in the two towns that	1) The two separate trials of the community	It is possible that the difference in attendance rates



Table 2 continued

	women participating in mammography screening test) involved in two trials are more effective.			received the community participation intervention compared with their matched media promotion towns. In Trial 2, a significantly higher attendance rate was observed in one town that received the family physician involvement intervention compared with its matched town which received the community participation intervention. There was no significant difference in attendance in the other pair of towns.	participation strategy meant that towns could be more closely matched on demographic criteria than would have been the case with a single trial of the three strategies.	observed were due to differences inherent in the communities rather than to the effect of the interventions. 2)The findings cannot be generalized to the whole population of Australia. 3)Other reasons may exist as influential towards women's participation in mammography screening apart from those included in the particular strategies.
<b>Mikhail and Petro-Nustas, 2001</b>	To translate to the Arabic language, adapt, and test Champion's revised Health Belief Model Scales to measure Jordanian women's beliefs about breast cancer and breast self-examination (BSE).	Cross-sectional survey	Quantitative approach	Factor analysis yielded nine factors: confidence 1, confidence 2, benefits, susceptibility, barriers, seriousness 1, seriousness 2, motivation 1, and motivation 2. All items on each factor were from the same construct. Significant correlations were found between the two confidence factors, the two motivation factors, and the two seriousness factors. The translated version of Champion's scales was found to be a valid and reliable tool for use with Jordanian women. It can be used in planning and	1) A stratified random sample was obtained. 2)The sample was consisted of University students and employees. 3) Champion's revised Health Belief Model Scales were translated to Arabic, validated by professional judges, back-translated to English, and pretested.	1) The lack of its predictive validity of the construct of benefits in this study may have been related to the fact that most of the respondents viewed BSE as beneficial, producing a lack of variability in this construct.  2) In addition, respondents may not have been aware of the connection between early



Table 2 continued

				testing interventions to improve BSE beliefs and practice.		detection of breast cancer and better prognosis or reduction of mortality from breast cancer. 3) The scale items should be reviewed for word connotations before using it in other Arab countries because of diverse dialects and cultures within the Arab world.
<b>Yu and Wu, 2005</b>	To explore factors influencing breast cancer screening behaviour among Chinese women residing in the United States.	Cross-sectional descriptive survey.	Quantitative approach	Access to health care, perceived barriers to mammography screening, need for breast health care, and information-seeking behaviour had direct effects on Chinese American women's mammography screening utilization. Cultural affiliation had an indirect effect on breast cancer screening behaviour, moderated through access to health care. The variance in mammography screening explained by these factors was 51%.	1) An English-language questionnaire was modified, translated, and pretested before use in the study sample. 2) To establish a content-valid research instrument, four professional and four lay experts were invited to evaluate the appropriateness of the items in the questionnaire.	1)The duration for the questionnaire to be completed was too long (approximately 60 minutes). 2) Because a Non-probability sampling method was used to recruit survey participants, these results cannot be generalized to the broader Chinese American population. 3) This study had a relatively low response rate (42%) 4)Further research is needed on the in-depth factors that influence

Table 2 continued

						mammography screening behaviour among Chinese women of US.
<b>Parsa et al., 2008</b>	To translate the use of Champion's Health Belief Model Scales (CHBMS) into the Malaysian context and validate the scale among Malaysian women.	Randomized survey.	Quantitative approach	Factor analysis yielded ten factors for BSE: confidence 1 (ability to differentiate normal and abnormal changes in the breasts), barriers to BSE, susceptibility for breast cancer, benefits of BSE, health motivation 1 (general health), seriousness 1 (fear of breast cancer), confidence 2 (ability to detect size of lumps), seriousness 2 (fear of long-term effects of breast cancer), health motivation 2 (preventive health practice), and confidence 3 (ability to perform BSE correctly). Factors for CBE scale include susceptibility, health motivation 1, benefits of CBE, seriousness 1, barriers of CBE, seriousness 2 and health motivation 2. For mammography the scale includes benefits of mammography,	1) A random sample of 425 women teachers was taken from 24 secondary schools in Selangor state, Malaysia. 2)The CHBMS was translated into the Malay language, validated by an expert's panel, back translated, and pretested.	1)For greater applicability, this tool could be tested among ethnically diverse populations. 2)There is a further need to broaden health care providers knowledge on women's mammography screening behaviour by using qualitative approaches.



Table 2 continued

				susceptibility, health motivation 1, seriousness 1, barriers to mammography seriousness 2 and health motivation 2.		
<b>Savage and Clarke, 1996</b>	To assess the factors associated with the use of two methods for the early detection of breast cancer using a theoretical framework derived from the theory of reasoned action and the Health Belief Model.	Survey	Quantitative approach	Intentions to have a mammogram were associated with perceived susceptibility to breast cancer, knowing a woman who has had a mammogram, previous mammography history and Pap test history. Intentions to do BSE were associated with selfefficacy, knowledge of breast cancer issues, concern about getting breast cancer and employment status. Both screening methods were associated with prior behaviour and concern about getting breast cancer.	1) Two suburbs were selected to represent a high and a low socioeconomic status (SES). Participants within these suburbs were randomly selected from the current telephone directory so that each suburb was equally represented. 2) Equal numbers of women (n = 85) were interviewed from each of the two suburbs.	1) Telephone interviews were used, which were comprised of 35 items—31 with pre-coded responses. 2) The possible factors associated with mammography screening behaviour had already been predicted than open investigated.
<b>Soskolne et al., 2007</b>	to examine factors related to screening mammography behaviour among Arab women by employing components from the Health Belief Model and the	Cross-sectional study.	Quantitative approach	The women had limited knowledge about breast cancer and mammography, and the rate of mammography screening behaviour (at the recommended interval) was only 20%. The women who were significantly more likely to undergo mammography were those who received a	1) A random sample was selected from the voters' rolls by choosing six out of every 10 women from the list (a total of 935 women). 2) The number of women in this sample was proportional to	1) Structured questionnaires were used throughout the interviews, which limits women's voice and the issues they want to state and emphasize. 2) This study focused only on the cultural and



Table 2 continued

	Theory of Reasoned Action.			recommendation from a health professional or from family/friends, perceived themselves as vulnerable to getting breast cancer, believed in the efficacy of the test, perceived it as not painful, were younger, were more educated and were only of borderline significance among those who expressed an intention to undergo mammography.	the size of each community.	ethnographic characteristics of women as being possible factors for their breast screening behaviour, than investigating such factors in a holistic broader way.
<b>Tolma et al, 2006</b>	To examine the applicability of the Theory of Planned Behavior (TPB) with the addition of the self-efficacy construct in the understanding of the motivation to obtain an initial screening mammogram among Cypriot women.	Cross-sectional survey.	Quantitative approach	The results of the study provided support of the TPB with the addition of self-efficacy in an international setting. Self-efficacy was the strongest predictor of intention. Other predictors of intention included educational level, time of last clinical breast examination, and age. The study also provided some empirical support of the distinction between self-efficacy and perceived behavioral control. Researchers may want to include self-efficacy in addition to the TPB and other demographic characteristics in future applications to more fully explain	1) A written authorization to conduct this Study was obtained by the director of the Public Health Services of the Ministry of Health in Cyprus, and an oral informed consent was obtained from each participant prior to the interview. 2) A generous age range for initial mammography screening was aimed to be recruited in this study's sample. 3) The overall response rate was	1) Structured face-to-face interviews were conducted to 293 women. This eliminates the opportunity to reveal women's actual thoughts and thus to uncover issues (factors towards mammography screening participation) the researcher has not thought about. 2) This study had a convenient sample. 3) The findings were only related to the factors that lead women to participate in breast screening and not those also related to their abstinence.



Table 2 continued

				behavioral outcomes.	88%.	
<b>Pasick et al., 2009</b>	To inductively explore the social context of Filipina and Latina women (the socio-cultural forces that shape people's day-to-day experiences and that directly and indirectly affect health and behaviour) to better understand mammography screening behaviour.	Three cases study	Qualitative approach	One powerful aspect of social context that emerged from the findings was relational culture, the processes of interdependence and interconnectedness among individuals and groups and the prioritization of these connections above virtually all else. It was argued that the TPB has been used so far to focus many research studies on a limited set of social roles, or people who are presumed to be significant others, such as mothers, husbands and sisters.	1) Each set of interviews addressed similar domains, informed the next set of interviews, and provided insights into the meanings of intention and subjective norms for Latinas and Filipinas contemplating accessing health care in general and mammography screening in particular. 2) For each group of respondents, interviews were continued until data saturation was reached. 3) Informed consent was obtained from all respondents, and study protocols were reviewed and approved by the Committee on Human Research at the University of California, San Francisco.	It is important to test the findings of this study in other Disciplines, in order to understand and explain behavior, especially within the social sciences (e.g., anthropology and sociology) and humanities (e.g., history and political science), when studying different cultural or socioeconomic groups. 2) Further research not only using ethnographic methods but also integrating multiple forms of qualitative and quantitative data in ways that maximize the strengths of each method could increase interest of the findings revealed here.
<b>Povey et al.,</b>	To examine the	Questionnaire survey	Quantitative approach	For each behaviour (behaviour	A Pearson product	1)It is possible that



Table 2 continued

2000	application of the Theory of Planned Behaviour (TPB) to two dietary behaviours with a particular focus on the roles of perceived control and self-efficacy as two components of the perceived behavioural control construct in the TPB.			for either eating five portions of fruit and vegetables per day or eating a low-fat diet, and actual eating behaviour one month later), the TPB variables were found to be good predictors of intentions (fat intake, $R^2 = .637$ ; fruit and vegetable intake, $R^2 = .572$ ), although less good at predicting behaviour (fat intake, $R^2 = .185$ ; fruit and vegetable intake, $R^2 = .321$ ), with self-efficacy being consistently more predictive than perceived control. In addition, examination of their determinant beliefs revealed self-efficacy and perceived control to have difference bases.	moment correlation matrix was computed in order to examine the relationship between the different components of the TPB (including self-efficacy), the MCB.P scores, perceived need and behaviour.	such results are purely because of the operationalization of each concept, and it would be useful in further research to examine different methods of measuring self-efficacy and perceived control. 2) Before any conclusions can be drawn concerning the distinction between the two variables (people's attitude and self-efficacy), further experimental studies are required. These may include an examination of manipulations of self-efficacy vs. perceived control on behaviour, or a further investigation of the clustering of the component beliefs. 3)By using the self-efficacy model, the focus of the researcher is limited on specific factors; the level of perceived ability to adopt a health behaviour.
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<p><b>Armitage and Conner, 1999</b></p>	<p>To assess the Theory of Planned Behaviour (TPB) using a prospective design, to extend the normative component to include self-identity, and to examine the proposed distinction between self-efficacy and Perceived Behavioural Control (PCB).</p>	<p>Mixed- method study</p>	<p>Quantitative approach</p>	<p>Findings indicated good internal and test-retest reliability of assessed components; evidence for a distinction between two processes of perceived behavioural control (self-efficacy and perceived control) ; support for inclusion of self-identity into the model; and predictive validity of the TPB over 3 months. Perhaps more importantly, there was some evidence to support causal ordering between predicted TPB variables. Cross-lagged panel correlation analysis supported the causal impact of self-efficacy on intention. The present study supports the use of the TPB as a reliable predictor of intentions and behaviour over time.</p>	<p>Items designed to measure self-efficacy and PCB were subjected to principal components analysis with varimax rotation. At both time points, items measuring the same construct loaded on the same factor ; items measuring different constructs loaded on different factors. These analyses therefore provide evidence for convergent and discriminant validity of items designed to measure self-efficacy and PCB. Moreover, these measures provided adequate internal and test-retest reliability, suggesting that potentially they may prove efficacious in future applications of the TPB. 2) The present study provides psychometrically</p>	<p>There is a the need for further research on the relationship between attitudes, perceived behavioural control and their underlying beliefs.</p>
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Table 2 continued

					reliable constructs for applying the TPB, which may be applied to other behaviours.	
<b>Allen et al., 2008</b>	To examine the relationship between social network characteristics and adherence to screening guidelines.	Intervention trial	Quantitative approach	Baseline adherence explained most of the variation in adherence at follow-up. For women age 40 to 51 years, having a mammogram at follow-up was predicted by encouragement by family and/or friends and subjective norms at baseline (odds ratio = 2.20 and 1.18, respectively). For women age 52 years and older, the perception that screening was normative was related to adherence at follow-up (odds ratio = 1.46). Thus, social network characteristics appeared to have a modest impact on screening.	In the study that conducted in 1996-1998, a stratified random sample was used.	Data for the current study were collected as part of the Woman to Woman Study, a 4-year randomized controlled trial designed to evaluate the impact of a work site-based breast and cervical cancer education project. Baseline and follow-up data were collected in 1996 and 1998, respectively. Thereby, the interpretation of the findings in this study (in 2008) may not be reliable, since women's way of living, environment and thus the influencing factors towards their adherence to mammography screening may have changed.
<b>Maxwell et al., 2006</b>	To examine the predictive validity of the	Survey	Quantitative approach	The likelihood of having a mammogram at follow-up (1998/1999) increased with	The sample of the longitudinal Canadian National	1) This study used the sample of a previous study, in order to

Table 2 continued

	<p>transtheoretical model (TTM) stages of change for mammography participation in Canadian women.</p>			<p>progressive stages of change at baseline (1996/1997) even after adjusting for potential confounders. Relative to women in maintenance, women in precontemplation, relapse, contemplation, relapse risk, and action were significantly less likely to report a recent mammogram during follow-up. This pattern held for women within and outside of the 50–69 target age range, and for urban and to a lesser degree rural-dwelling women.</p>	<p>Population Health Survey was a representative one, which was used by this study.</p>	<p>achieve its goal, instead of recruiting its own sample. 2)The interpretation of the findings may had been different if the sample was recruited from this study, since women's behaviour may have changed and influenced by different factors.</p>
<p><b>Sutton and Doner, 1992</b></p>	<p>To assess the nature of older Americans' medical contacts and potential clinical opportunities for early detection of cancer.</p>	<p>Randomized survey</p>	<p>Quantitative approach</p>	<p>The physician type seen and the reason for the visit play important roles in mammography utilization among older women.</p>	<p>The sample was randomly selected.</p>	<p>1) Although the questionnaire included items on a number of cancer early detection tests, the analysis presented here is restricted to women's visits to physicians and their recent mammography experience. 2)Questionnaires were used as a measurement tool throughout telephone interviews. Such a communication between the researcher</p>



Table 2 continued

						may not be easy and clear and important information for the participant cannot be revealed throughout such a structured interview.
<b>Coll et al., 1989</b>	To investigate the utilization of mammography as a screening test for breast cancer in a middle-income Connecticut suburban community of 30,000 people.	Survey	Quantitative approach	The association of age with mammography utilization was not statistically significant. The impact of physician advice was statistically significant. Physicians recommended screening mammography less for patients with low level of education, low income and greater age. We conclude that utilization of screening mammography in the community studied is related more strongly to education and to income than to age. The bivariate association of mammography utilization with age may be attributable to a cohort effect, rather than an age effect.	The sample was randomly selected.	1)Telephone interviews were conducted, which could act as an obstacle to women who wanted to state the factors they believe important in relation to their utilisation of mammography screening.

# **CHAPTER 3 - Methodology and Research Methods**

### **3. 1 Introduction**

In this chapter the main methodological considerations and justifications of this research study are discussed. First, a clarification of the aims and objectives are made. Next, the various philosophical issues regarding the research strategy and structure of the study are clarified, examined and analysed. This is followed by the illustration and critique of the characteristics of the chosen methodological approach. The development of the particular research study design is then presented. The selection of the methods used for the data collection is justified and details of their development are presented. Presentation of the sample selection procedure and access follow. The data collection procedure is then described. The ethical considerations and issues that arise from the particular research framework and settings are also considered. Finally, a description of the data analysis employed in the study is also presented.

## **3.2 Purpose, Aim and Objectives of the Particular Research Study**

### **3.2.1 Purpose and Study Aim**

The aim of this research study is to examine Greek women's perceptions of mammography screening, by exploring factors that appear to influence their mammography screening behaviour. The ultimate goal of the proposed research study is to better understand Greek women's behaviour and uncover their needs in relation to mammography screening which may help inform any interventions to change women's behaviour. The findings of this study may as a consequence have relevance for health care professionals in relation to their current communication practice with the Greek female population. Such an understanding could generally provide insight into future health care approaches, to promote cancer screening, adjusted to Greek women's individualized needs and values.

### **3.2.2 Objectives**

- To examine Greek women's perceptions of mammography screening.
- To explore women's experiences of the mammography screening test.
- To understand the factors that influence screening behaviour in Greek women.



### 3.3 Epistemological Assumptions

A variety of different approaches exist to gain knowledge within the social sciences, depending on the goal of each research study and question. These approaches need to be considered alongside the philosophical (epistemological) understanding of the researcher regarding the nature of the knowledge to be acquired. For Dant (1991), knowledge is the key feature of societies, since it is part of what binds individuals and groups of humans into that larger group that is termed society. More specifically, social sciences are concerned with the interactions of human beings, examined from various perspectives, where the interactions are consequently judged in different ways (Dant, 1991). Additionally, as Dilthey pointed out, the interaction among people of a society also influences the way they behave, and the final characterization of reality lies in the way each of us accepts and understands peoples' behaviour (Berger and Luckmann, 1966). Nevertheless, knowledge is also a key feature of fragmentation among social groups. In particular, this fragmentation refers to the differences in how people perceive and share knowledge. This process is not only associated with their beliefs, but also with the unspoken knowledge hidden within social practices and customs, which mark the differences and frequently the demarcation between people and social groups (Dant, 1991). In the social sciences, what is accepted as knowledge depends upon the norms and values of the scientific community and of the wider culture, which can change over time. Hence, within the notion of social sciences, knowledge may be gained through the investigation of different perspectives individuals or groups have, and the interaction between them.

Regarding the investigation in question, there are various philosophical parameters that should be taken into account, in order to pursue the research question most effectively. This study seeks to investigate the various factors that lead women to a particular behaviour regarding early detection of breast cancer, which according to Hollis (1994), could be based on individuals, on society as a whole or a combination of both. More specifically, the factors that could affect Greek women's behaviour could be influenced by individuals' perceptions, beliefs, experiences or the Greek socio-cultural context. It is therefore of great importance to identify those factors that may affect women's behaviour regarding the early detection of breast cancer, and further determine the nature and level of this influence.

### **3.4 Rationale for Adopting an Interpretative Approach**

In social sciences there are different forms of gaining and interpreting knowledge. This is due to the complexity that characterises the social world (Benton and Craib, 2001). According to Hollis (1994), there are two main traditions of gaining knowledge. One of them is revealing information using an interpretative approach, while the second one belongs to the approach of natural sciences. The interpretative tradition is often seen as the main and radical alternative to positivism, which is a branch of the natural science approach (Benton and Craib, 2001).

The natural science tradition is a positivistic method of approaching knowledge and therefore ways of acquiring it. Within the natural sciences approach, human beings are objects of biology and other natural sciences which produce their own knowledge of the social world (Benton and Craib, 2001). More specifically, the main characteristics of the natural sciences are based on the idea of the unity of the scientific method, the use of the ideal mathematical science, and the significance of general laws to explanation phenomena (von Wright, 1971). Objectivity is also one of the most important characteristics of natural sciences, since reality already exists and can be identified through an investigation and the use of the hypothetico-deductive model (Henwood and Pidgeon, 1993). Moreover, quantification and therefore generalization of the findings are also some of the principal approaches adopted through an investigation based on natural sciences' approach (Henwood and Pidgeon, 1993). Since natural sciences use a positivistic approach to answer a particular kind of research question, and therefore gain knowledge, this does not demand in-depth exploration, and investigation of social phenomena. Consequently, this study could not be accomplished using a positivistic approach, as the identification of the factors associated with women's behaviour towards mammography screening in Greece need to be explored in depth, taking into account both behavioural and accompanying socio-cultural factors.

An interpretative approach in social sciences has different objects of study compared to those in natural sciences (Benton and Craib, 2001). In social sciences, an interpretative approach studies the meaning behind actions (Weber, 1947). Moreover, according to Willis (2007), interpretivists declare that research is influenced and

formed by the pre-existing world perceptions of the researchers. According to Kant, it is not possible to conduct objective research from which your views and subjective opinions are completely different (Kant, 1996). In other words, interpretivists argue that researchers use their language, tradition and culture to construct meaning and thereby are able to share their understanding with other members of the same group they are part of. Therefore, interpretivism is an understanding of multiple perspectives of a particular topic or phenomenon (Willis, 2007). In addition, interpretivism is a reaction against the idea that you can use the same research method and paradigms in social sciences as those used in natural sciences. Thus, interpretivism proposes that we abandon the search for generalisable truths and laws about human behaviour and concentrate instead on local understanding.

Hence, with regard to this investigation an interpretative tradition was followed within the framework of qualitative methodology. This was because the aim of this study was to uncover the experiences of Greek women and the influences they experienced in relation to breast screening.

### **3.5 Qualitative and Quantitative Research Approaches**

The approaches nurses can adopt to accomplish their research can vary. Burns and Grove (2003) believe that the main research methods nurses use to investigate various phenomena in their profession are quantitative and qualitative research. However, both of them have their strengths and weaknesses (Polit and Hunger, 1999). The selection of one of these two major research approaches is based on the underlying philosophical basis and beliefs of the researcher and on the nature of the research question, whereas some studies may effectively combine both of these approaches (Cormack, 2000; Polit and Hunger, 1999; Clifford, 1997).

#### **3.5.1 Adopting a Qualitative Approach**

The main aspect that distinguishes qualitative from quantitative research is the nature of the research question. For example, in qualitative research, investigation of social phenomena from the participants' point of view is based on an epistemology that can accommodate multiple and constructed realities (Holloway, 2005). In other words, participants can interpret and explain a social phenomenon from many perspectives, based on their own, possibly different, background, experiences, and thus their own beliefs and perceptions. On the contrary, quantitative research is based on an epistemology which supports objectivity, since reality already exists and it is investigated through testing a hypothesis (Henwood and Pidgeon, 1993). In this study, the qualitative approach was used, since the aim was to explore a social phenomenon (Silverman, 2006; Bryman, 1998), which was women's behaviour in relation to mammography screening.

Qualitative research uses multiple methods that are interactive and humanistic. In other words, qualitative research is person-oriented, and during its application the participants are seen as human beings, and not as a collection of physical entities as in quantitative research (Holloway, 2005; Creswell, 2003). Through qualitative research, the researchers can explore the reasons that lead to a particular behaviour in order to propose or apply appropriate interventions which could transform or influence behaviours. According to Holloway (2005), in order to achieve a health behaviour change, a clear understanding of the reasons that lead to the particular behaviour is necessary. Thus, a qualitative approach is more likely to uncover deeper and more

detailed influences responsible for the particular behaviour of participation in mammography screening.

Setting up a hypothesis is not necessarily as characteristic of qualitative research as it is for quantitative. Creswell (2003) maintained that qualitative research is fundamentally interpretive. In qualitative research, certain assumptions inherent in the researcher are unavoidable. This can happen particularly when the researcher is part of a health care setting and has specific experiences in relation to the particular area they are investigating (Holloway, 2005). In a qualitative study the researcher filters the collected data through their personal lens that is situated in a specific socio-political and historical moment (Creswell, 2003). In addition, flexibility and an open-minded way of thinking are some of the core characteristics of qualitative research, aiming to identify and accept any unusual or new stimulus during the data collection and data analysis procedure (Holloway, 2005).

Flexibility is an essential issue that accompanies qualitative research. Since qualitative researchers aim for an open and unconstrained interaction, it is important that they can respond constructively to the ideas expressed by the participants (Holloway, 2005). Qualitative research designs are often emergent rather than tightly prefigured (Creswell, 2003). As a consequence, qualitative researchers rarely have a strictly predefined protocol for sampling, data collection and analysis. On the contrary, the model for the development of the sample, data generation and analysis is usually structured as the study progresses (Holloway, 2005; Creswell, 2003).

Naturalism is also a characteristic of qualitative research. Methodological naturalism supports that research techniques should be familiar to participants, respect their beliefs, have similarities with normal social interaction, and eradicate the possibility of making participants feel uncomfortable and disturbed (Holloway, 2005). Since in qualitative research emphasis is given to understanding people's experiences and interpretation of the social world, adoption of naturalism was an essential feature of this study. Thereby, qualitative research took place in the natural setting, which was the participants' office, or a place selected by them, in order for them to feel comfortable (Creswell, 2003). Nevertheless, this does not mean that any form of investigation is unlikely to affect participants' behaviour (Holloway, 2005). On the

contrary, the use of highly interactive methods and the emphasis on reflexivity entails recognition that the research study itself is a social process (Holloway, 2005).

Finally, a characteristic of qualitative research is the emphasis on the extensive interaction between the researcher and the participants (Holloway, 2005). In qualitative research the methods of data collection are growing and they increasingly involve active participation by and sensitivity to participants (Creswell, 2003). Creswell (2003) added that qualitative researchers look for involvement of their participants in data collection and seek to build rapport and credibility with the participant subjects. In order to explore the meanings that people attach to their experiences, or to view the social world through the participants' point of view in the research, it is necessary for the researcher to interact with them over an extended period and in a fairly unconstrained way (Holloway, 2005). Therefore, priority is given to particular research methods which give the opportunity to the participants to open themselves up and express their feelings arising from their experiences. The most commonly used methods to achieve this are participant observation and unstructured or semi-structured interview techniques (Holloway, 2005). Through these approaches, the researcher advances the possibilities of learning from people rather than simply studying them (Holloway, 2005).

### **3.6 The Development of the Particular Research Study Design**

The research study was divided into two phases. The first phase was a survey and the second phase a qualitative study. Two different tools were used, one in each of the pre-mentioned phases. A questionnaire was used for the conduction of the survey and semi-structured interviews for the conduction of the qualitative research. The second phase (interviews) comprised the main study.

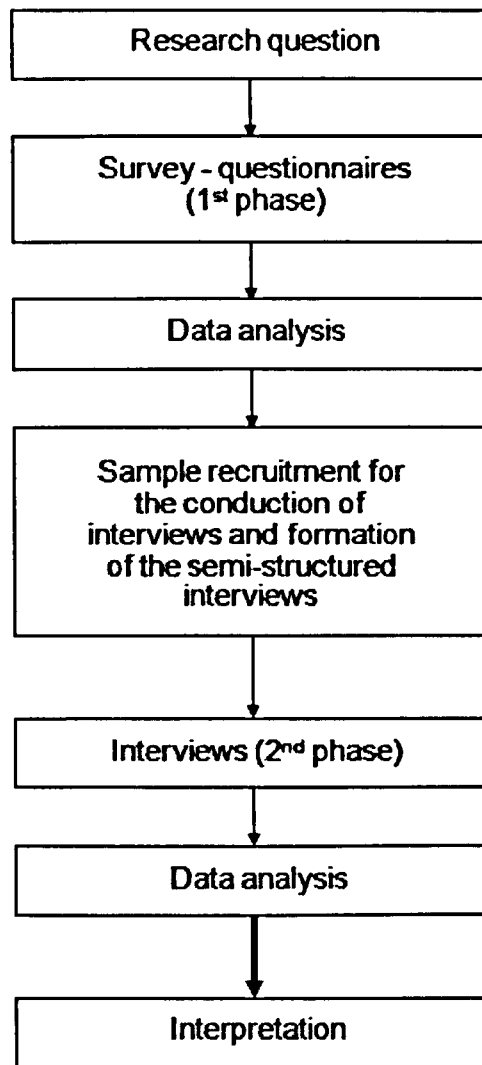
A descriptive survey was primarily conducted, in order to partly formulate the interviews which followed. Descriptive information about the general context these interviewees belonged to was also provided by the analysis of the questionnaires. Nevertheless, the main aim of this survey was to recruit participants for the interviews, which explored women's experiences and perceptions of mammography screening utilization and the factors that influence their behaviour towards mammography screening. Semi-structured interviews followed the survey, including women who agreed to participate in a more in-depth interaction with the researcher. The Transtheoretical Model of behaviour change (TTM) was used as an orientating framework to inform the design of both the survey and interview questions and the later analysis of the findings.

At this point, it should be stated that the research design was an exploratory one due to the research questions asked in this study and as such data from the first tool was used to partly guide the formation of the second. With reference to Tashakkori and Teddlie (2003), the use of more than one research method or data collection procedures, are called multi-strand designs. There are many types of multi-strand designs, each of which depends on the use of single or multiple approaches, the stage of integration and the procedure that was used for linking the strands (Tashakkori and Teddlie, 2003). In the quantitative/qualitative sequence, the investigator starts with a quantitative method and then proceeds with the follow-up qualitative study (Tashakkori and Teddlie, 1998). Nevertheless, the overall purpose of such a design is to use a qualitative strand to explain initial quantitative results (Creswell and Plano Clark, 2011). The researcher and the research problem are more quantitatively oriented and such a design is called explanatory (Creswell and Plano Clark, 2011), this being different from the nature and characteristics of this study. On the other

hand, within an explorative sequential design the researcher is more qualitatively oriented, but a qualitative method is being conducted prior to the quantitative method, aiming to generalise the qualitative findings identified (Creswell and Plano Clark, 2011). Thus, despite the sequential use of quantitative and qualitative methods, and the exploratory nature of this study's research design, it cannot be characterised as any of the above sequential mixed method designs.

The distinguishing feature of the exploratory design used here was that the second phase of the study emerged in part from the findings of the first phase. This was achieved by primarily conducting a broad based survey to access general view and partly facilitate in thinking about areas to explore further in the interviews. The survey was also used to recruit the sample for the interviews. **Figure 3** presents the exact research design of the study.





**Figure 3: Research study design**

Traditionally, a ‘multimethod’ research approach (Tashakkori and Teddlie, 2003) is a purposive integration of qualitative and quantitative methods from the same paradigm that can occur at the data collection stage, the data analysis and/or the discussion of the findings (Andrew and Halcomb, 2009). There is a wide range of mixed methods designs in the literature, with over 40 designs have being categorized (Tashakkori and Teddlie, 2003). Apart from the combination of quantitative and qualitative methods the main characteristic of a mixed method study, the design should be decided based on the following issues. i) the sequence of the qualitative and quantitative data collection implementation ii) the relative priority that will be given to the qualitative and quantitative data collection and analysis iii) the stage the qualitative and quantitative data will be integrated and iv) the overall theoretical perspective that guides the study (Creswell, 2003). Nevertheless, this study did not use a traditional

mixed method approach, despite conducting a survey primarily to the interviews. The questionnaire used in the survey was not used to measure or test anything. On the contrary, as already stated, it was used as a tool to recruit the sample for the interviews and provide descriptive information on the demographic and general characteristics of the participants.

As described above, the qualitative and quantitative data in this study were collected in a sequential and not in a concurrent way. In sequential studies, the data collection method follows after the other, while in concurrent studies they are collected in the same time (Andrew and Halcomb, 2009). The decision for such a selection is determined by the nature of the research question and the rationale for collecting its dataset (Andrew and Halcomb, 2009).

The initial conduct of a survey in this study reflects to the priority of the interviews that followed. Priority refers to the importance of either the qualitative or quantitative methods used (Andrew and Halcomb, 2009). In explanatory research priority is mostly assigned to the quantitative component (Andrew and Halcomb, 2009). On the contrary, in exploratory studies, greater priority is often assigned to qualitative elements, which may be subsequently studied quantitatively (Andrew and Halcomb, 2009). In this study an exploratory design was adopted with greater priority given to the qualitative element.

## **3.7 Methods**

### **3.7.1 Questionnaire Survey**

Surveys are a type of formal, objective, systematic process of gathering numeric information on a subject. This information is presented in numerical form and analysed with statistical procedures (Cormack, 2000; Polit and Hunger, 1999). More specifically, the underlying aim of this kind of approach is to identify and explain the simple relationships between events in an objective, value-free and controlled-data way (Polit and Hunger, 1999). The core meaning and intention of a survey is determined by the aims that concern collection of numeric information on people's knowledge, opinions and attitudes (Polit and Hunger, 1999). Moreover, Bowling and Embrahim (2005) concurred that surveys are designed to measure phenomena such as events, behaviour, perceptions and attitudes of a particular population each research study is interested in. In this study, a survey was carried out as a first step in the investigation, in order to provide numerical and further statistical information on Greek women's demographic characteristics and behaviours in relation to mammography screening utilisation. Bowling and Embrahim (2005) emphasized that descriptive surveys can provide valuable information about characteristics of populations of interest, and regarding the social and attitudinal change and influencing factors.

This survey was conducted using a simple questionnaire. A questionnaire is an important instrument of research; a tool for data collection (Oppenheim, 1992). The word questionnaire is sometimes used to distinguish a set of questions, including perhaps some open-ended ones, from more rigidly constructed scales or tests (Oppenheim, 1992). Sometimes it is used to mean a document containing a set of questions for respondents to complete themselves, and sometimes to mean the list of questions which an interviewer reads out to respondents (Gilbert, 1993). In this study a questionnaire was given to the respondents for them to fill in. This type of questionnaire is called 'self-administered' or 'self-completion' questionnaire (Gilbert, 1993).

The main reason for using a self-completion questionnaire was that the aim of this survey was to provide descriptive information of a large population, and recruit

interviewees by using a quick and easy-to-complete set of questions. Gilbert (1993) also pointed out that the main advantage of self-completed questionnaires is that a large population can be surveyed relatively cheaply. Costs are lower because interviews are not used and pre-coding and computerisation speeds up analysis. In addition, it is also possible for the respondents to fill in questionnaires at a time convenient to them (Gilbert, 1993). The questionnaire was designed so that it could be completed in 20 minutes, in order that participants did not feel time-pressured.

The questionnaire used in this survey comprised of close-ended questions regarding participants' demographic characteristics, their mammography screening behaviour and the possible influential factors of mammography screening participation. It comprised of three different sections using close-ended multiple choice questions (Appendix 1). In the first section, the distinguishing characteristics of the particular questionnaire included the demographic characteristics of each woman. These were women's age, marital status, educational level, nationality and family history of breast cancer. The second section of the questionnaire was influenced by one of the main concepts of the TTM; the stages of change (Kelaher et al., 1999; Prochaska et al., 1992b). In this section, women were asked to state their breast screening behaviour in the past, current period and in the future. In the third and last section of the questionnaire, the participants of the survey were asked their views on possible motivators and inhibitors in relation to their participation in mammography screening. This section was influenced by another fundamental feature of the TTM, the pros and cons (the reasons for and against behaviour change).

All questions in the third section of the questionnaire were drawn from a selection of questions included in previous quantitative research studies on similar themes (Wu and West, 2007; Maxwell et al., 2006; Palmer et al., 2005; Rakowski et al., 1997). The selection of these questions was influenced by this study's aim, and many of them were used as they were or adjusted to the survey's aim. Finally, at the end of each questionnaire, women were asked whether they would like to participate in a further individual interview about their experiences and views about mammography screening.

### **3.7.1.1 Validity and Reliability of the Questionnaires**

The content of the questionnaires was formed appropriately to meet the essential preconditions of an objective, ethical and valid survey. According to Coolican (2004), two of the most essential goals of a survey is to guarantee reliable and valid results, through a representative and accurate main sample. Gilbert (1993) claimed that reliability of a questionnaire exists when the same results among different research studies are revealed by the use of the same questionnaire with the same sampling criteria. Additionally, validity of a survey refers to its capability to measure what it actually set out to measure (Gilbert, 1993).

Regarding the validity of this questionnaire, Burns and Grove (2003) clarified that a specific group of experts could be used to critique and provide useful suggestions associated with any changes throughout the questionnaires. In this study, before distributing any of the questionnaires, health care professionals such as nurse colleagues, gynaecologists, other medical professionals and women belonging to the age group of 40-70 years old were asked to provide feedback on the questionnaire as it developed, and consider whether the questionnaire's content was consistent with the aim and the objectives of the study. Fifteen (15) questionnaires were distributed amongst this group of individuals. Their comments and corrections were focused on the way some of the questions were expressed, requesting greater clarity. These were mainly in the second and third sections. In addition, they suggested more possible answers (such as 'I don't know/I'm not sure' in question 5) in two of the demographic questions. Finally, they stated that it took them 15-20 minutes to complete the questionnaire, characterising it as a convenient time for participating in the survey.

It should be noted here that the above procedure was used in order to test the questionnaire, not the survey. The above testing of the questionnaire was part of the questionnaire's development. On the contrary, testing of the survey would have been achieved by conducting a pilot study.

### **3.7.2 Semi-Structured Interviews**

For the main part of the study interviews were selected as the main method tool of this research study for a variety of reasons. According to Murphy and Dingwall (2003), qualitative interviews are characterised as appropriate when the aim is to explore how participants define their own experiences and practices. Interviews provide rich data, which can provide access to the interviewee's way of thinking about a range of issues and positive and negative aspects of their life (Silverman, 2001). In this way, utilization of qualitative interviews can provide a beneficial tool to reveal new ideas and theories associated with the subject under study (Murphy and Dingwall, 2003). Thus, interviews were selected in this study, not only to explore in more depth women's experiences of mammography but also to reveal new ideas and information from Greek women themselves about their mammography screening behaviour.

It is acknowledged that a limitation of qualitative studies is that their findings cannot be generalized (Murphy and Dingwall, 2003; Polit and Hunger, 1999). However, according to Murphy and Dingwall (2003) the goal of qualitative research is to explore new issues of concern, not necessarily to produce findings that are directly generalisable to a broader population.

With regard to the development of the interviews, there were no guidelines to specify the number of questions this should involve. It is important to remember that the more questions an interview consists of, the more structured the interview becomes (Holloway, 2005). As a result, the risk of data determination by the researcher increases, as well as the risk of biasing the participants' answers. Hence, what is really important for the participant may never be revealed (Holloway, 2005). Nevertheless, interviews need some guidance in order to give them shape, and thus include the main issues the researcher aims to investigate. Thereby, semi-structured interviews were applied. In Appendix 2 the interview guide used in this study is presented. Semi-structured interviews enable the interviewer to ask questions across particular areas of relevance to the study, but leave them free to alter their sequence and to probe for more information (Gilbert, 1993). In addition, semi-structured interviews allow the participants to introduce their own ideas, and thus influence the data (Holloway, 2005).

The method that was used for the data analysis was a further reason for using semi-structured interviews. This was the constant comparative method. This means that as the number of the interviews rises, the questions included in each interview are supposed to rise too. In this way, the issues that arose from the analysis of each interview were included in the next one to be explored. Therefore, the interviews could not be structured.

In addition, concepts of the TTM were used to facilitate the areas of questioning employed in the interviews. Questions on women's breast screening behaviour stage were used, influenced by the TTM's stages of change. Such questions included the frequency women practice mammography screening, the period of its initiation, and their intention to continue the same behaviour in the future. Additionally, the pros and cons of the TTM influenced those questions regarding the possible facilitators and barriers to mammography screening behaviour respectively.

Open-ended questions were used in the semi-structured interviews. After introducing the interviewees to the investigated subject, open-ended questions were conducted without any further direction or influence of the respondents' reports. Open-ended questions focused on three main themes. The first issue was women's detailed behaviour in relation to mammography screening. The second issue was on the factors that led women to adopt their screening behaviour. Women's perceptions and experiences in relation to the mammography screening test was another theme.

Probes were used throughout the above open-ended questions, allowing women to bring in their own views. According to Barton (2001), open-ended questions usually permit the interviewees to share views and feelings they may have considered 'unimportant'. In relation to this study, women's perspectives were what really mattered, especially when the data for and against mammography screening are currently in counterbalance each other (Barton, 2001). The aim of using open-ended questions and probes was to reveal more information related to influences Greek women have in relation to their mammography screening behaviour.

### **3.8 Sampling**

This study was concerned with Greek women's perceptions and experiences of mammography screening. In order to access these views I needed to think about how I might find women from the general population from a range of backgrounds who might be willing to engage in such a study. Interestingly in Greece there is a strong tradition of women's associations, where women with particular interests meet regularly on a social basis. It was felt that such groups, most of which are concentrated in the City of Athens, would give access to a range of women who might be interested to talk to a researcher about breast cancer and breast cancer screening.

#### **3.8.1 Inclusion and Exclusion Criteria**

Only women's associations which were located in the city of Athens were approached, in order to exclude the long distance from breast clinics, as a possible reason for women's abstinence from mammography screening. Athens is a city where many breast cancer centres and polyclinics are located, and it could be assumed that women could have easy access to breast screening testing.

These associations were purposively selected in order to include a variety of areas of interest, such as cultural, political, athletic, educational and professional. Such a selection based on their main interests and focus was made in order to maximize the variety of the sample's characteristics, background, personalities (interests) and hopefully perceptions and experiences in relation to mammography screening. In addition, such a variation in the associations' focus themes was made in order to have a variety of Greek women's demographic characteristics. Demographic characteristics such as the distribution of age and educational level, were intended to be used in order to ensure the accuracy of the sampling operation (Oppenheim, 1992). Thus, by this purposive recruitment, it was desired to get the maximum variation of the general Greek female population.

Apart from the above inclusion criteria, which were the minimum number of their members, their focus themes and location, there was also an essential exclusion criterion regarding their selection. Associations which focused on health issues and diseases, including cancer associations, were excluded in order to avoid a biased



sample which may have been more educated about cancer and early detection of breast cancer. A further reason for this exclusion was the different needs of these women in relation to routine breast screening. In other words, the majority of women in cancer associations may already have had breast cancer, and therefore in their case the early detecting examinations of breast cancer would probably differ. The breast cancer early detecting tests would be applied on a different frequency, depending on the individuals' needs and particularly their risk of developing breast cancer again (Pherson et al., 2000).

Based on the above inclusion and exclusion criteria, a purposive selection of 10 women's associations was initially made, from the total 120 electronically recorded associations in Athens. It was intended to distribute over 20 questionnaires in each of those associations, in order to be able to recruit a satisfactory number of interviewees. The anticipated number of interviews recruited through the conduction of the initial survey was at least 2 interviewees from each of the associations.

### **3.9 Ethical Issues and Access**

Ethics is a branch of philosophy that deals with the issue of morality (Cormack, 2000). Since this piece of research dealt with Greek women's perceptions, experiences, and influential factors in relation to breast cancer and mammography screening behaviour, many ethical issues were raised. A main concern was to avoid causing distress to Greek women interviewees and also to the rest of the participants in this research study. Due to the fact that there was no ethics committee for accessing the local women's associations, the Medical School Ethics Committee of the University of Nottingham was approached for an ethical review of this research. Ethical approval for this study was finally granted by the medical school ethics committee.

#### **3.9.1 Approval of the Research and Research Access**

Following ethical review, access to the required sample of the particular research study was then negotiated via the associations. First, contact with the directors of the selected women's associations was made in order to provide them with a detailed description of the aims and objectives of the study, and requesting permission to attend a group meeting to explain the research and invite members to take part in the survey. Written permission (an example of which is presented in Appendix 3) was obtained from the directors of six women's associations who agreed for their members to be approached by the researcher during or subsequent to the aforementioned group meetings.

#### **3.9.2 Consent and Access**

After obtaining the necessary permission from the associations' directors, a brief description of this research study was presented to their members during one of their planned meetings. The aim of this presentation was to acquire permission to conduct this survey through the proper channels. An information sheet (Appendix 4) outlining the aim and procedures of this study, as well as the researcher's background and interest in the accomplishment of this study was distributed to the members of each association. If individuals feel they have been specially selected and that their participation is highly valued, this may be an adequate reward (Gilbert, 1993). In other words, it was of importance to emphasize to the participants their opportunity to make a valuable contribution to this research study by participating (Gilbert, 1993). Verbal

description of this study's aims and procedures was also given by the researcher during the aforementioned meetings, giving women the chance to ask about anything about this study. Thus, this enabled the researcher to approach women in a congruent way so that they understood the essence of the research and could then decide for themselves if they wished to participate.

In addition, the aforementioned questionnaires of the survey were distributed to all women who attended the above meetings, along with the researcher's contact details, in case they wished to participate in the interview. All women who agreed to be interviewed signed a consent form (Appendix 5). In this form, they confirmed that they voluntarily agreed to take part in the interview after reading and understanding the information provided by the researcher and in the participants' information sheet. In this consent form, the necessary authorization to anonymously disclose the results from the women's participation was made by the participants. Additional information in relation to the participants' rights was clarified in this form too.

Measures were also taken to avoid any psychological stigmatism of the participants, especially those who did not participate in mammography screening. Holloway (2005) maintained that the sensitive nature of a phenomenon studied may cause distress to participants. Therefore, it was clarified to the participants that they would not be placed under any pressure to answer or discuss any issues they were not comfortable with. A family doctor was in place for women who may have felt psychologically distressed about breast cancer and mammography screening, or those who wanted more information about this test. In other words, a professional source was put in place in advance if required, in order to safeguard women's psychological health. However, since none of the participants felt distressed throughout the interview, such a professional source was not used. Participants were also encouraged throughout the interviews to consult their personal doctor about any queries that may have arose concerning cancer and breast screening during or resultant from their participation in the study.

Finally, it should be also mentioned that confidentiality and anonymity was a crucial aspect, which constituted a certain characteristic of this research study. Participants were reassured that their reports would be confidential and anonymous. In particular,

once the interviews were finished, the recorded participants' reports were locked in a private and safe place in order to secure their answers and to assure confidentiality. This place was the lockable filing cabinets in the School of Nursing at the University of Nottingham, where PhD students routinely archive their data (questionnaires, interviews, permission letters and consent forms) to be securely kept there for long periods. Lastly, the questionnaires' analysis, transcriptions, and further analysis of the interviewees' reports were also kept confidential and secure, by separating the identification numbers of the participants from the data. These were also archived in the lockable filing cabinets.

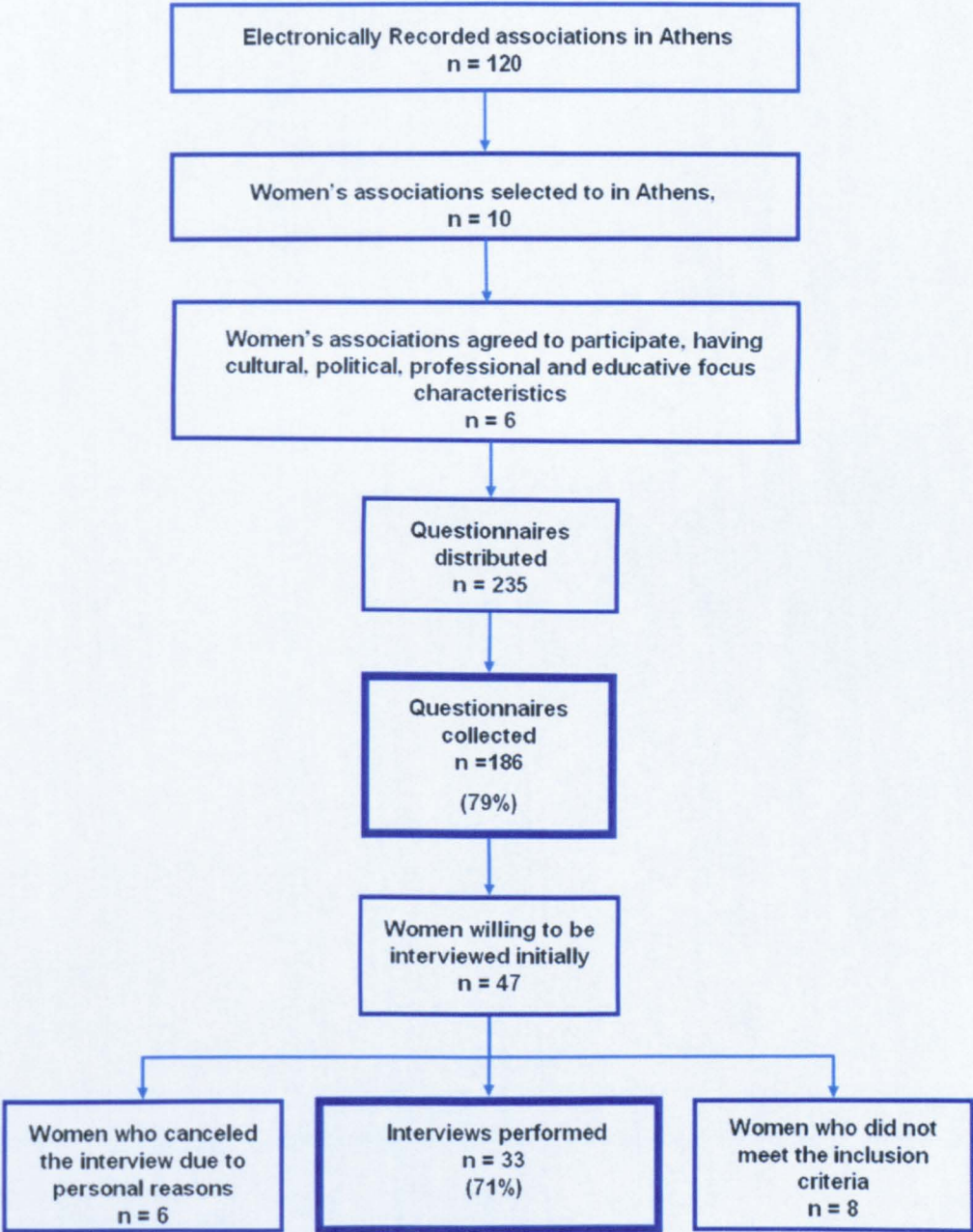
### **3.10 Data Collection**

Participants could return questionnaires directly back to the researcher, or alternatively seal them in the envelopes provided and deposit them in a locked box at their association secretary's office. This box was collected after two weeks of the questionnaires' distribution.

The data collection took place between March 2008 and July 2008. All participants were recruited from six women's associations in Athens, Greece. Initially, ten associations were selected, as described before (section 3.8.1) and the president of the association was contacted, initially by post, and informed about the study's aims, objectives and methods of data collection. This was subsequently followed-up with a telephone call by the researcher in order to book a personal meeting with each president for further discussion and information. From those ten associations, six finally agreed to participate in this research and allow access to members. These six associations' main focuses varied, and included cultural (3), political (1), educational (1) and professional (1) characteristics. The majority of the total 120 electronically registered women's associations in Athens had a cultural main focus theme, and they were most willing to participate in the study. The members of the six associations used to meet on a monthly basis, so it was easy for the researcher to participate in their meetings.

Through meetings with the members of each women's association, a total number of 235 questionnaires were distributed. Over 30 women attended each meeting, but this did not comprise the total number of each association's members. Initially, the researcher was introduced by the director of each association. A brief introduction regarding the aim and processes of the study followed by the researcher, together with the distribution of the information sheet and questionnaires to all women attending each meeting. Most of the participants in this survey preferred to return the questionnaire to the researcher on the same day of its distribution; those who did not returned it directly placed their questionnaires in a locked box at the relevant association secretary's office, to be collected two weeks after the questionnaires' distribution. One hundred and eighty six (186) women completed the survey, resulting in a response rate of 79%. From those 186 women who participated in the survey, 47

were initially willing to take part in an individual semi-structured interview. However, 33 (71% participation) interviews were finally carried out. From those 14 women not interviewed, 8 did not meet the inclusion criteria of the sample, since they were living in district areas of Greece. The remaining 6 had to cancel the interview appointment claiming personal health problems. Figure 4 shows the flow of participants through this study.



**Figure 4:** Sample recruitment for the survey's and interviews' implementation

The duration of the 33 interviews ranged from 30 minutes to 1hr and 45 minutes. After collecting all the questionnaires from each association, all women who indicated that they were willing to be interviewed were contacted by phone, in order to book an appointment for the interview. Interviews were conducted in a comfortable place selected by the participants, either within their associations' environment or at an alternative quiet place, where only the researcher and the interviewee was present. Quiet coffee shops were preferred and selected by the interviewees. In most of the cases the interviewer offered to pay for the coffee in recognition of the time the interviewees spent at the particular meeting and interview. This happened at the end of the interview, so that the interviewees did not feel uncomfortable with such an offer. Nevertheless, not all interviewees accepted this offer (9 out of the 33), claiming the researcher's student status as the reason for their abstention from paying.

A brief introduction to the subject and the aim of the particular research study was made before recording the interview. Permission was asked from the interviewee to record the interview. The interviewee was reminded not to hesitate to ask anything during the interview and that they could interrupt the interview for any reason. Also, it was clarified to all interviewees that the interview could be stopped in case if they felt uncomfortable. Nevertheless, none of them ceased the interview. Each interview started by asking women their perceptions/opinions of the severity of breast cancer nowadays. This was followed by the interviewees' mammography screening behaviour and the factors that influenced them. Questions regarding their perception and experience of mammography screening were also included. Additionally, questions on issues that arose in previous interviews followed. At the end of each interview, women were asked if they would like to add anything else relevant to the theme of the study, or anything else they possibly remembered in relation to what they had already stated.

Interestingly, at the end of the interview a few women commented on the psychotherapeutic value of the interview to them. They felt relief about talking to the interviewer regarding the factors that influenced their screening behaviour and their breast screening experiences. As they stated, they felt thankful and satisfied due to their participation, which was a rare chance for them to talk freely about issues they usually did not mention. Additionally, in this study, it was observed that most of the

interviewees experienced breast cancer through a relative or close friend who had the disease. Similarly, Sinicrope et al. (2009) identified that personal experiences with cancer were reported as a primary motivation for participation in a breast cancer qualitative, cohort study.



### **3.11 Data Analysis**

#### **3.11.1 Quantitative Analysis of the Questionnaires**

The Statistical Package for the Social Sciences (SPSS) was used to analyse the descriptive data collected from the questionnaires. Since the main goal of the survey was to investigate Greek women's demographic characteristics and their perceptions and behaviours towards mammography screening utilization, descriptive statistical tests were used (Bowling and Embrahim, 2005). In addition, data from open-ended interviews was transcribed, stored and coded using NVIVO. Translation of the answers to the open-ended questions into English was performed after their analysis. This assisted the researcher in interpreting Greek women's reports in an appropriate way, by eliminating misunderstandings that could occur from translation meanings from Greek to English (Bryman, 1998).

#### **3.11.2 Qualitative Analysis of the Recorded Interviews**

All of the interviews were transcribed ad verbatim. Once transcribed the transcripts were stored in NVIVO. The NVIVO software was used to help create codes, subcategories and themes which represented the factors women perceived as being of particular influence in relation to their screening behaviour. Tree-nodes were mainly used for the creation of themes and sub-themes.

The basic approach to the analysis of the interview material was that of the constant comparative method. The use of a constant comparative method was originally designed for theory building (Glaser and Strauss, 1967). More specifically, the digitally recorded interviews were initially transcribed, while the notes regarding observations during the interviews were also recorded. Holloway (2005) suggested the application of a constant comparative way (a constant comparison between words, sentences, paragraphs, codes, and categories) under a simultaneous and interactive process. The reason for such a detailed and constant analysis is to identify similarities and differences among the selected data (Holloway, 2005). Nevertheless, in this study the constant comparative method was used only to explore the issues that arose in the first interviews (being relayed into the subsequent ones). Comparison between words, sentences, codes, paragraphs and categories was made after all the interviews had been undertaken. The analysis was concluded by comparing the emerging themes with

what was already known in the literature, in order to build up a picture of factors that affect women's mammography screening behaviour in Greece.

Memos and diagrams were used during the analysis of the interviews to provide a summary of the researcher's thinking. According to Holloway (2005), memos and diagrams can consist of generated questions and plans for future interviews. In particular, diagrams can provide a visual form of data that is clear and succinct (Strauss and Corbin, 1998), and memos can provide a record of the research process and its progress. Despite the fact that such memos could become increasingly complex due to the comparisons among the data (Holloway, 2005), they finally assisted in the establishment of a various themes, by linking codes and categories. The variety of themes revealed were compared and contrasted with the existing literature, while elements of the behavioural models were used to facilitate understanding of the findings.

### **3.11.3 Credibility and Validity in Qualitative Research**

The importance of reliability, credibility and validity differs in qualitative research. According to Creswell (2003), in qualitative research studies, reliability can be used in a limited way to check for consistent patterns of theme development among several investigators on a team. On the other hand, although the credibility of the results in a qualitative research study is of essential importance, there are strong arguments that render the application of validity impossible in qualitative research (Holloway, 2005). However, validity refers to the quality and strengths of the arguments that researchers use to justify their positions on the reliability of their evidence and the credibility of their conclusions (Holloway, 2005). Therefore, according to Holloway (2005), credibility in qualitative research is the equivalent of validity. Creswell (2003) adds that validity is seen as a strength of qualitative research, defining it in this context as determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers of an account.

Nevertheless, as already mentioned before, reassurance of the credibility of the findings is the most important issue in a qualitative research study and it demands the adoption of particular principles. Four of such essential principles are the narrative

data, extensive interaction with research participants, a flexible plan of inquiry and a naturalistic approach to the inquiry.

Apart from the four aforementioned methodological commitments, transparency and critical examination of evidence in the light of relevant theory are essential principles to assure credibility of the findings (Holloway, 2005). Transparency is an attempt to demonstrate the credibility of qualitative research evidence by allowing the reader to understand the decision making of the researchers and their analytical approach to data (Holloway, 2005). In this study, transparency was sought by providing the reader with all the necessary justifications for selecting particular data analysis procedures and for the understanding of the themes that were revealed. Such justifications included the constant comparative way that was used for analysing the data, and the reflection to existing behavioural models for understanding the findings. All the necessary justifications were also provided in relation to the methodological tools that were used, the data collection procedure and research design. Such justifications comprised the critical examination of the findings.

In addition, examination of evidence is of major importance within qualitative research. In order to apply the results from qualitative research to other groups and contexts, credibility of the findings should have primarily been achieved in the light of an existing theory (Holloway, 2005). Therefore, transferability of this study's results for similar future studies was desired. This was accomplished by reflecting elements of existing behavioural theories which facilitated the understanding of the findings. A diagrammatic representation/model was therefore created, presenting the main themes revealed, their role and interaction among them. This consequently provided the results of qualitative research the ability to be compared with behavioural theories that have wider application (Holloway, 2005)

Reflexivity, is an additional essential element in enhancing the validity of qualitative research, and refers to an increased sensitivity to the ways in which the researcher and research process have shaped the collected data. A researcher's personal characteristics and background will affect what they choose to investigate, the angle of investigation, the methods judged most adequate for this purpose, the findings considered most appropriate and the framing and communication of conclusions

(Mays and Pope, 2000). In this study, all the research processes have been justified in detail, explaining how the nature and philosophy of the researcher influenced the way of thinking and thereby the way of acting within all the research procedures, including the interpretation of the findings. This was achieved by using the TTM as a behavioural theory to partly influence and interpret the method tools and data analysis respectively, aiming to provide the necessary interventions within the lens of a nurse. Additionally, it is important to note that professional background and personal experiences as a student nurse influenced the selection of this research theme. It is also acknowledged that the researcher's background could also influence the interviewees' responses, and particularly those related to the health care system and health care providers. The perceptions and background of the researcher can also influence the interpretation of women's responses and thus the understanding of the findings. In addition, the young age of the researcher could also have influenced the communication with women over 40 years old. In order to try and address these issues the researcher maintained a professional role towards participants, and attempted to gain women's trust during the interaction through letting them set the time of the interview, the place as well as the pace of the conversation and making them feel comfortable during the interviews. Hence, in qualitative inquiry, the question is neither whether the researcher affects the process nor whether such an effect can be prevented but rather to present and reflect on what may be influencing the study and its participants and make that clear to any external reader. This methodological point has been turned into a commitment to reflexivity (Marlterud, 2001; Mays and Pope, 2000).

Thus, the implementation of the above principles not only advances the credibility of the findings qualitative research can have, but also presents valid alternative to the principles of eliminating bias, reproducibility and objectivity in the justification of quantitative evidence (Holloway, 2005).

### **3.12 Conclusion**

In this chapter, the philosophical and methodological perspectives and approaches that characterize the various parameters of the research study's aim have been presented and discussed along with the rationale for the choice of research methods and the use of a mixed-method approach. More specifically, it was clarified that the selection of the research approach was based on an underlying philosophical basis and the researcher's beliefs and on the nature of the research (Cormack, 2000; Polit and Hunger, 1999; Clifford, 1997). Decisions taken in relation to sampling, access, and ethics have been discussed and finally the actual data collection process itself was presented. For the analysis of the collected data, the SPSS and N-Vivo software were used for the questionnaires and the interviews respectively. The analysis of the wealth of data produced by the survey questionnaire and the subsequent qualitative interviews revealed three major themes that are presented and discussed in the following chapters.

## **CHAPTER 4 – Questionnaire Findings**



## **4.1 Introduction**

This chapter presents the results from the survey. The first section of this chapter presents participants' demographic characteristics, the second section reports women's behaviour towards mammography screening, and finally, the third section presents participants' perceptions towards particular factors that may influence their decision to participate or abstain from breast cancer screening.

## **4.2 Demographic Characteristics and Breast Cancer Family History of the Participants**

The ages of the 186 women who completed the survey (out of the 235 copies distributed) ranged from 40 to 70 years old. Sixty-three (33.9%) of them belonged to the age group 60-70, and 56 (30.1%) were between 50-59 years old. All women were of Greek nationality, 116 were married, 28 widows, 27 single and 14 divorced. Participants had an average to advanced educational level. The demographic characteristics of survey participants are shown in Table 3.

**Table 3: Demographic characteristics of the survey's participants**

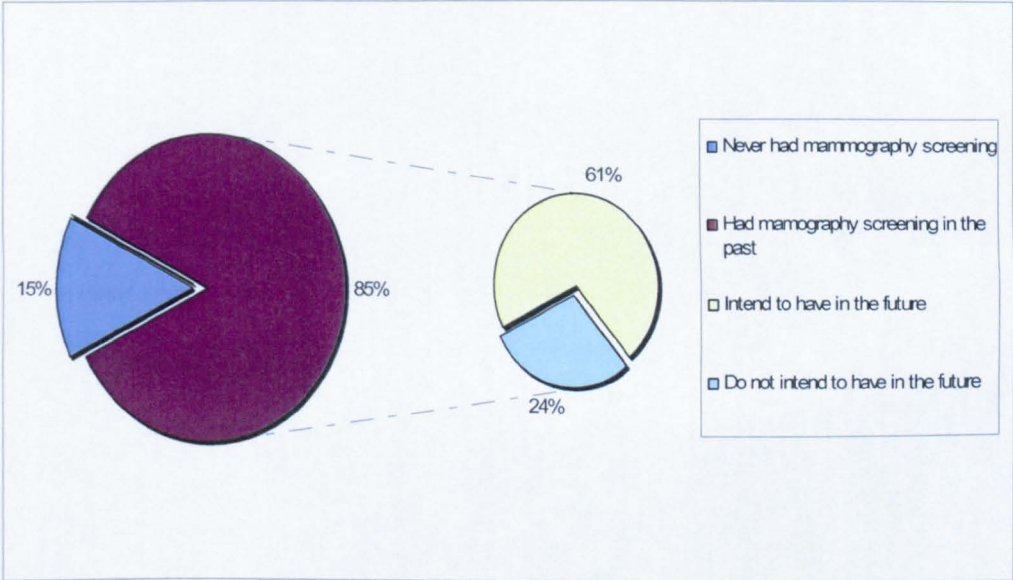
	<b>Participants n = 186 (%)</b>
<b>Age</b>	
Under 40	16 (8.6)
40-49	27 (14.5)
50-59	56 (30.1)
60-70	63 (33.9)
Over 70	24 (12.9)
<b>Family Status</b>	
Single	27 (14.5)
Married	116 (62.4)
Divorced	14 (7.5)
Widow	28 (15.1)
Missing*	1 (0.5)
<b>Educational Level</b>	
Less than high school	12 (6.5)
High school	64 (34.4)
College	12 (6.5)
University	72 (38.7)
Master- PhD	25 (13.4)
Missing*	1 (0.5)
<b>Nationality</b>	
Greek	186 (100.0)
Other	0 (0.0)
<b>Breast Cancer Family History</b>	
Women who have	31 (16.7)
Women who do not have	143 (76.9)
Women who do not know/are not sure	12 (6.5)

\*Missing value- unanswered question

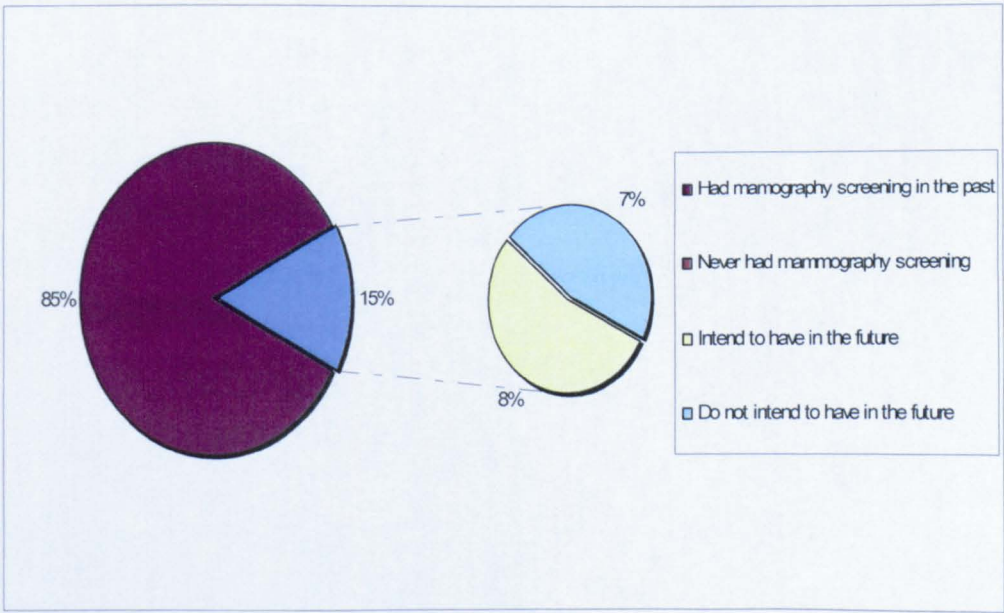
With regard to women's breast cancer family history, the majority (n = 143) stated that they did not have a breast cancer family history, 31 that they did, while 12 were not sure or they did not know. For those women who had incidences of breast cancer in their family, 11 stated their mother, 7 their aunt, 4 their grandmother and 2 their sister. Finally, 5 women had previously been treated for breast cancer.

### 4.3 Women’s Participation in Regular Mammography Screening

The majority of women indicated that they were participating in mammography screening, with 85% (n= 158) stating that they had mammography screening in the past. However, only 61% (n= 113) of those who stated that they had mammography screening in the past indicated that they intended to repeat a mammography test in the next 2 years. Graphical representation of women’s participation in and abstinence from mammography screening is shown in Figures 5 and 6 respectively.



**Figure 5:** Women’s participation in mammography screening



**Figure 6:** Women’s abstinence from mammography screening

With regard to the sector women usually use in order to have a mammography screening test, there was a tendency to use the private sector (43%), with 22% of the participants using the national provision. Moreover, 24.2% of the participants indicated that they used both the private and the national sector. Interestingly, 46.8% of those women who had mammography screening in the past preferred to use the private sector. In addition, 21.4% of those women who had never had a mammography screening test in the past stated the private sector as their preference for any future screening, while 7.1% of them stated the national sector.

#### **4.5 Women's Perceptions of the Mammography Screening Test**

The third section of the questionnaire (Appendix 1) was composed of a variety of possible positive and negative factors that had been identified as influential towards women's behaviour in previous studies. Throughout the analysis of this section the aim was to establish an overview of women's perceptions towards mammography screening, by testing whether factors revealed as being influential in other countries played any part in Greek women's perceptions towards this test. This finding was part of the general context that characterized the members of the particular associations approached in this study. In Tables 4 and 5 women's perceptions of mammography screening are presented, which could act as motivators or inhibitors in relation to screening behaviour.

With regard to the factors that could influence women in this study to engage in routine mammography screening, 88.2% (n = 164) of the participants stated that they would be more likely to go for mammograms if a doctor supported it. Additionally, 89.2% (n= 166) agreed that mammography screening is capable of finding small tumors that could not be identified through the clinical examination. Moreover, 80.6% of women agreed that participation in regular mammography screening gives you the feeling of control over your health (n = 150), while only 11.3% (n = 21) disagreed with this. Finally, almost all of the participants (90.9%) agreed that women need regular mammograms even when they have no family history of breast cancer.

Similarly, the majority of the participants disagreed with almost all of the possible negative factors that could lead to their abstinence from mammography screening. The majority of them disagreed that mammography screening test was only necessary when there was breast pain or problem (76.9%). Furthermore, they disagreed that embarrassment and discomfort during mammograms were not obstacles for taking up mammography screening, according to 84.9% (n = 158) of the participants. Similarly, 78.5% (n= 146) of the participants did not count cost and waiting time for a mammogram as deterrents towards their decision to participate in routine mammograms. Also, 73.7% (n = 137) of the women, disagreed that it is God's Will to get breast cancer, and therefore there is no point getting a mammogram. However,



68.8% (n = 128) of women agreed that having mammograms causes a lot of worry or anxiety about a possible detection of breast cancer.

**Table 4:** Possible motivators towards participation in mammography screening test

	Agree	Disagree	Don't know	Total	Missing data*
	n (%)	n (%)	n (%)	n (%)	n (%)
Doctors' motivation/suggestion	164 (88.2)	10 (5.4)	7 (3.8)	181 (97.3)	5 (2.7)
Mammograms' capacity to identify very small lumps	166 (89.2)	4 (2.2)	13 (7)	183 (98.4)	3 (1.6)
Feeling of control over their health	150 (80.6)	13 (7)	21 (11.3)	184 (98.9)	2 (1.1)
Mammograms for also women with average risk	169 (90.9)	6 (3.2)	9 (4.8)	184 (98.9)	2 (1.1)

\*Did not answer

**Table 5:** Possible inhibitors towards participation in mammography screening test

	Agree	Disagree	Don't know	Total	Missing data*
	n (%)	n (%)	n (%)	n (%)	n (%)
Anxiety mammography screening test	128 (68.8)	37 (19.9)	19 (10.2)	184 (98.9)	2 (1.1)
Mammograms only if there is a breast problem/symptom	24 (12.9)	143 (76.9)	14 (7.5)	181 (97.3)	5 (2.7)
Embarrassment and uncomfortable feeling during mammograms	12 (6.5)	158 (84.9)	11 (5.9)	181 (97.3)	5 (2.7)
Pain during mammograms	6 (3.2)	158 (84.9)	18 (9.7)	182 (97.8)	4 (2.2)
Waiting time until get a mammogram	21 (11.3)	146 (78.5)	15 (8.1)	182 (97.8)	4 (2.2)
Cost of mammography screening	22 (11.8)	146 (78.5)	13 (7)	181 (97.3)	5 (2.7)
It is God's Will to develop cancer, so reason to early detect it n (%)	20 (10.8)	137 (73.7)	25 (13.4)	182 (97.8)	4 (2.2)

\*Did not answer

Thus, the majority of women agreed with a number of factors which could support their decision to participate in regular mammography screening. Similarly, they rejected most of the possible negative factors except from anxiety. Thus, the first impression regarding women's mammography screening behaviour and perceptions of

mammography screening appeared to be positive in relation to their participation. However, what is not known are the reasons behind why a large number indicated they were unlikely to go for mammography screening again.

## 4.6 Conclusion

Interestingly, it was found that a high number of participants in the survey had attended mammography screening at least once in the past. This appears surprising given the data presented in the literature review chapter, which alluded to low participation rates amongst Greek women (Dimitrakaki et al., 2009; Mauri et al., 2009; Keramopoulos et al., 2005; Fyntanidou and Petropoulou, 2000). However, only 61% of these indicated that they intended to continue their participation in the future. The majority of participants in the survey agreed with most of the positive characteristics, experiences, and factors associated with the mammography screening practice and did not agree with the more negative statements relating to mammography, with the exception of anxiety.

This sets out a descriptive concept of those women's demographic and behavioural characteristics, as also the impact of factors identified in other countries towards women's decision to participate in routine mammography screening. Interestingly, there is a missing gap between the high percentage of women agreeing with the positive characteristics, experiences and factors associated with mammograms and their low percentage of intending to participate in this test again. In other words, since the majority of women disagreed with the almost all of the negative factors that could lead to their abstinence from mammograms, it is unknown why they did not intend to participate in this test again. Additionally, it is unknown whether anxiety is the only reason for their abstinence from this test, as identified throughout this survey. Lastly, the question of whether there is any association between the influential factors and women's different mammography screening behaviour has not been answered. Thus, we know little about what those people think about breast cancer and screening, and what influences their participation in routine mammograms and breast screening. Therefore, this could further warrant the necessity of an in-depth investigation regarding the actual factors that influence women towards their decision to adhere or abstain from mammography screening in Greece. Such an in-depth investigation was made through the conduction of individual semi-structured interviews, which findings are presented in the following Chapter.

## **CHAPTER 5 - Perceptions of Cancer and Screening**

## **5.1 Introduction**

In this chapter, the findings arising from the analysis of the interviews are presented. Interviewees' demographic and breast screening characteristics are initially outlined as established from the questionnaires. This is followed by presentation of the three key themes that have arisen out of the analysis of the interviews. The first theme relates to the influences women had from their environment in relation to their breast screening behaviour. The second presents women's experiences of their access to mammography screening and their relationship with doctors. Finally, the third comprises the emotional responses women had in relation to cancer, breast cancer and screening.

## **5.2 Interviewees' Demographic Characteristics**

All 33 interviewees were members of women's associations in Athens. Three were cultural associations, 1 political, 1 educational and 1 professional. From the 33 women who agreed to participate in an individual interview, 10 were from cultural, 10 from educational, 8 from political and 5 from professional associations.

Table 6 shows the demographic characteristics of the 33 interviewees, derived from the preliminary survey. Similar to the demographic characteristics of participants in the survey, the majority of the interviewees belonged to the age groups 40-49 and 50-59. Most of them were married, having an advanced level of education. Six women out of the total 33 had a history of breast cancer in their family. For three women the affected family member was their mother, and for 1 woman her sister, while 2 of the interviewees had themselves been treated for breast cancer.



**Table 6: Interviewees' demographic characteristics**

	<b>Interviewees n (%)</b>
	<b>n = 33</b>
<b>Age</b>	
Under 40	2 (6.1)
40-49	12 (36.4)
50-59	12 (36.4)
60-70	6 (18.2)
Over 70	1 (3.0)
<b>Family Status</b>	
Single	6 (18.2)
Married	21 (63.6)
Divorced	2 (6.1)
Widowed	4 (12.1)
<b>Educational Level</b>	
Less than high school	1 (3.0)
High school	6 (18.2)
College	2 (6.1)
University	15 (45.5)
Master-PhD	9 (27.3)
<b>Nationality</b>	
Greek	33 (100.0)
Other	0 (0.0)
<b>Breast Cancer Family History</b>	
Women who have	6 (18.2)
Women who do not have	25 (75.8)
Women who do not know/are not sure	2 (6.1)

### 5.3 Interviewees' Mammography Screening Behaviour

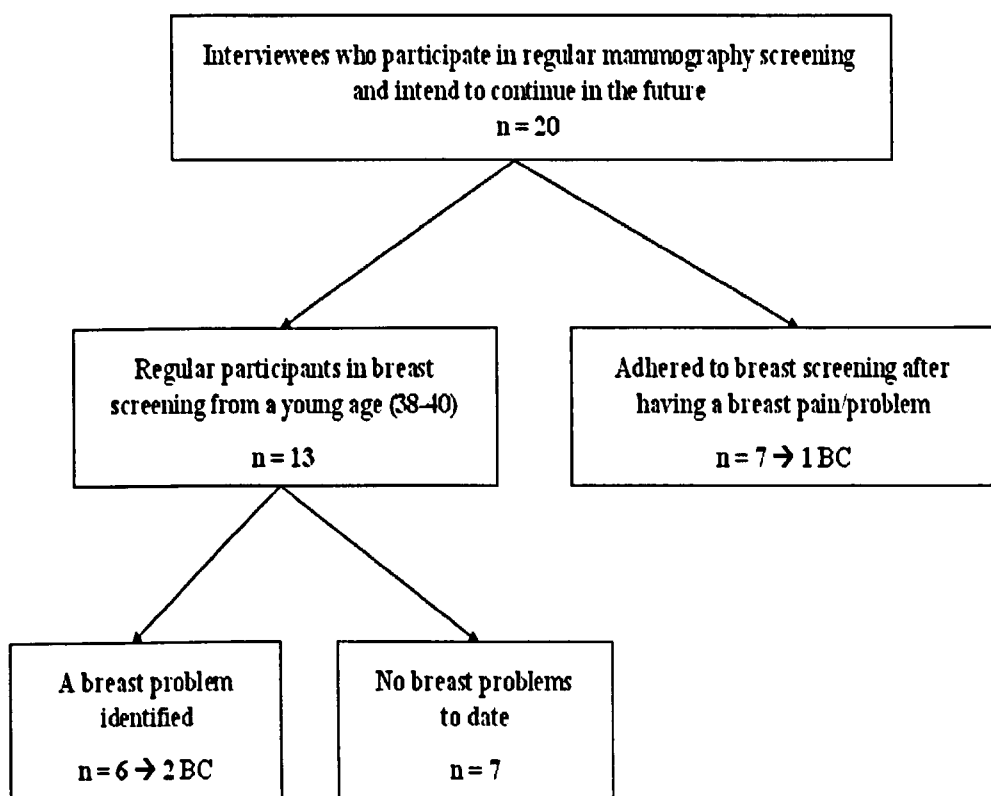
Interviewees' replies related to regular mammography screening were divided into two main behaviours; those who participated in regular mammography screening and those who abstained. However, 1/3 of women who regularly participated in mammography screening had done so after the detection of a breast lump or experiencing a breast problem.

From the 20 interviewees who participated regularly in mammography screening, 6 of them used the private sector, while 7 interviewees used the public sector. The remaining 7 women resorted to using both the private and the public sector for a mammography screening test and clinical breast examination.

In Figure 7 the interviewees' behavioural characteristics regarding their participation in regular mammography screening are shown. From the total 33 interviewees, 20 practiced mammography screening on a regular basis and they intended to continue in the future. However, 7 out of those 20 women adhered to breast screening after they developed a breast pain/problem or lump that was detected by chance, mostly by breast self-examination. One of those 7 women had been diagnosed with breast cancer. The next 2 quotations are examples of women who adhered to mammography screening.

*24: I have been a regular participant in mammography screening for the last 20 years. I am 59 years old now and I started mammography screening when I was 40. At that time I had breast pain, so since then, I have been regularly clinically examined and had mammograms, in order to make sure that it is not something malignant.*

*30: I am 63 years old and I started participating in regular mammography screening in 1975, when I was 33 years old. I had a breast problem after breast-feeding my 2 children, so that was why I started regular mammography screening, after the suggestion of my personal gynaecologist. I was then diagnosed with a breast problem; I had lots of cysts in my left breast, so my doctor suggested that I continue having mammography screening tests regularly in order to check the condition of my breasts.*



\*BC = Breast Cancer

**Figure 7:** Interviewees’ behavioural characteristics regarding their adherence to regular mammography screening

In Figure 7 we can see that 13 out of the total 33 interviewees attended mammography screening on a regular basis, not due to the development of a breast problem. Most of them started participating in regular mammography screening due to a variety of positive views they had developed from a young age. The following two extracts support this.

*15: If I remember correctly, I started regular mammography screening when I was 36, maybe earlier... But I remember that it was since I had my child, when I was 36, I have been doing mammography screening on a regular basis. My behaviour towards breast screening is similar as to other gynaecological tests as well, since my generation adopted such examinations very easily ... Women in my generation were sexually free and since we started having sexual relationships and we were having the*

*contraceptive pill, we also adopted all the gynaecological examinations with an open mind ... including mammography screening.*

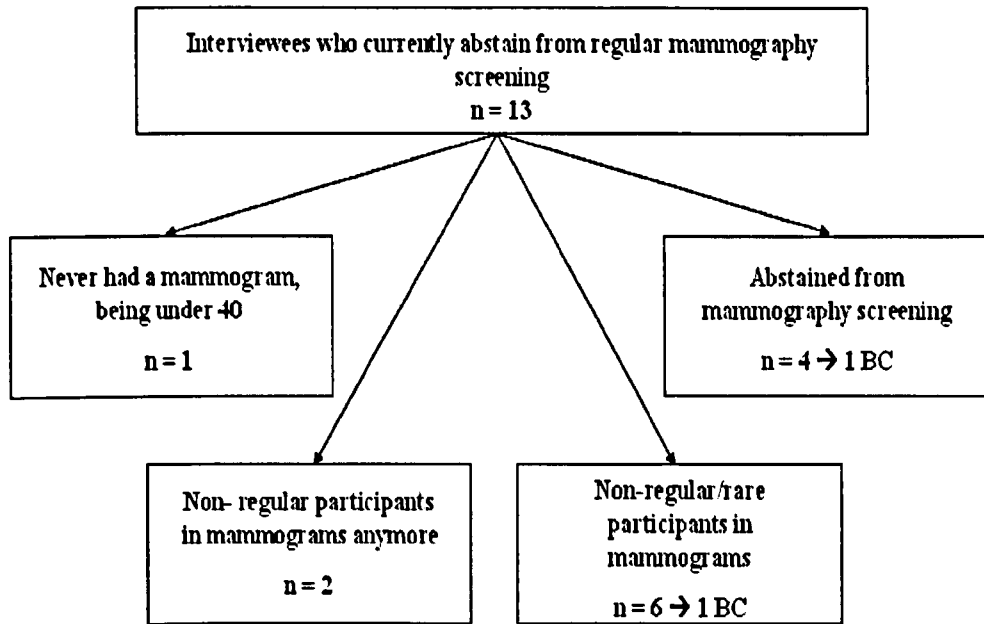
*20: I have had mammography screening tests on an annual basis, for the last 2 years. I am 42 years old and I started mammography screening just because I believe in early detection. I didn't ever have any breast problem or pain.*

Lastly, from those 13 women who were attending regular mammography screening from the age of 38-40, 4 had been diagnosed with a breast problem, and a further 2 had been treated for breast cancer. The latter two women note:

*14: I was having a mammography screening test on an annual basis, since I was 40 years old. The decision was mine, because I was afraid of the possibility of developing breast cancer. And that was what happened in the end, and I believe I was so lucky to have the particular behaviour towards breast screening. I believe that my participation in regular mammography screening saved my life, because I detected it (breast cancer) at an early stage.*

*19: I started participating in annual mammography screening from the age of 35. Now, after being treated for breast cancer I feel fine. I have also stopped my medication, and I am only having a mammography screening test every six months to my other breast [since she had partial mastectomy].*

Figure 8 presents details related to women's abstinence from regular mammography screening. Interestingly, 13 women stated that they did not currently attend mammography, while 4 of them had refused to have mammography screening and they did not intend to change their behaviour in the future.



\*BC = Breast Cancer

**Figure 8:** Interviewees’ behavioural characteristics in relation to women’s abstinence from mammography screening

The following 3 quotations are from women who refused to participate in regular breast screening.

*12: No, I am not having a mammography screening test. I constantly postpone such early detecting examinations. I usually postpone all these tests, similarly to my visits to doctors in general.*

*31: I am not participating in breast screening at all. I will never have a mammogram, for any kind of reasons, and I don’t want to have in the future. I’m not even doing breast clinical examination or either breast self examination. I believe that if it [breast cancer] is ever going to come, let it come.*

*16: My personal behaviour is that ... I don’t ever go for a mammography screening test. I believe that since I have a small breast, I don’t need to go for such tests, and my personal gynaecologist I used to go many years ago never suggested to me something like this.*

In addition, 6 women had mammography screening once or twice in their lives but they did not intend to do it regularly. As they reported, they had no symptoms or breast problem so did not feel that they needed to participate in regular mammography screening. The next 3 extracts were reported by the above category of women.

*22: I have had a mammography screening test only once in my life. The reason I have not done it again is because of my neglectfulness, and because I have never had breast pain or a problem.*

*8: I didn't have a mammography screening test on a regular basis because I have never had any breast pain or problem, neither any particular breast cancer family history. This is also because of my neglectfulness towards such examinations.*

*32: I have only once had a mammography screening test 2 years ago, when I was 42, due to a pain I had in my breast, but the doctors told me at that time that I didn't have a malignancy. So, since then, I keep postponing the next mammography screening test, even though doctors suggested that I continue having a mammography screening test on an annual basis.*

Two women had regular mammography screening tests in the past but not anymore. Their reports on this issue are presented in the following 2 extracts.

*26: I was participating in mammography screening test regularly in the past for a short period, but now, since I also have to care more about my disease (multiple sclerosis) I don't care that much anymore about early detection of breast cancer. So, I don't participate in breast screening examinations anymore.*

*27: I admit that I was regularly doing mammography screening tests in the past, but I am not anymore. It is because of my neglectfulness and because I didn't have any kind of breast pain or discomfort. If I have any kind of breast discomfort or pain in the future I will go for it.*

Finally, 1 woman who was under the age of 40 had never had a mammography screening test or breast examination, but was willing to start participating in the near future, stated:

*2: I am not going for any kind of breast screening examination yet. I might start participating in regular mammography screening test from next year. I also don't have any breast cancer family history, but I do have family history of cancer. My doctor suggested me to start participation in breast screening tests on a regular basis, so I am planning to start in the future.*



To summarize, details related to the interviewees' demographic and breast screening behaviour were presented. It is noted that although the women's associations used to recruit women into this study varied, in terms of their focus (e.g. cultural, political, educational and professional), the interviewees' demographic characteristics appeared to be similar for the majority of them. All of them were of Greek origin, and most of them were married and had an advanced educational level. The majority were between 40 to 59 years old.

The interviewees' mammography screening behaviour varied and could be divided into participants and abstainers from regular mammography screening. Interestingly, from the total 20 women who had adhered to regular mammography screening, 1/3 had begun screening due to a breast problem or breast pain. Additionally, women used either public or private breast screening centres, with a small number of women who used a combination of both.

On the other hand, from the 13 women who abstained from regular mammography screening, the majority had undergone a mammogram once or twice in their lives. Finally, a number of women (n=4) had refused to participate in regular mammography screening.

In the next section, the three key themes revealed from the analysis of the interviews are presented. Firstly, the influences women had from their environment are presented. Then, their experiences of their engagement with mammography screening procedure are outlined. Presentation of the emotional responses women had in relation to cancer, breast cancer and screening follows.

## **5.4 Influences Arising from Women's Interaction with their Environment: Social Networks**

In this section, the role the interviewees' social networks in relation to their breast screening behaviour and perceptions is investigated. Such networks were comprised of the immediate and the broader network. Initially, the influence of women's immediate social networks is explored. These included women's influences and education mainly from their family and friends on breast cancer and screening. Breast cancer experiences comprised an additional influential factor that arose from their close social networks. Analysis of the role and influence of women's broader social networks follows. These are related to the information women received from mass media, cancer campaigns, their associations and doctors.

### **5.4.1 Immediate Social Networks**

The most important influences on women's decisions towards regular breast screening appeared to arise from their immediate social network. Such influences included women's family, school and close friends. First, the role of family is explored. Analysis of the influential role of women's close friends follows. Lastly, the role of women's personal experiences with other diseases, as well as their friends' and family members' experiences with cancer is analysed.

#### **5.4.1.1 The role of the family**

Women's families appeared to have a strong influence on their breast screening behaviour, with both positive and negative effects on breast screening. The majority of regular participants in mammography screening supported that they had already built-up a positive ideology towards early detection and screening from a young age. The next extract, noted by a regular screening participant, puts emphasis on parents' educative and good role model towards their children's future screening behaviour.

*29: I believe that it is a matter of general education if a woman knows enough regarding early detection of breast cancer, so she can then decide what to do. I believe that everything depends on the family's interest to educate their children on such issues. Also, when parents create a friendly and creative communication between them and their children, and when they really care about them, this can affect their*

*children's perceptions. Children understand when their parents really care about them and pay attention to their will and needs. So, children's immediate network is very crucial for their perceptions in general and thus for their perceptions of early detecting examinations. If a mother is also participating in regular mammography screening, and she takes her daughter to the gynaecologist from a relatively young age ... 17-20, then the daughter will already know a lot about gynaecological examinations and screening. I am doing the same thing for my daughter, and whenever she has queries about anything, I am always able to help her understand, and she already has her personal gynaecologist with whom she can speak free and feels comfortable with. So we - parents - are the exemplars for our children.*

Women's female family members appeared to act as exemplars, which in turn positively influenced breast screening behaviour. In cases where the interviewees' mother and/or older sister were participating in regular breast screening, the interviewees engaged in the same behaviour. The following two extracts, reported by regular participants in mammography screening, support this concept.

*20: My mother and sister do participate in regular mammography screening and this is what positively influenced me towards my breast screening behaviour and regular mammography screening.*

*17: I was informed and influenced by my immediate network. What I want to say is that my mother, my friends and my mother's friends had the same breast screening behaviour.*

Parallel to the education women had from their family, school also appeared to be an essential source of education for some women. The interviewee quoted below, despite being a non-regular participant in breast screening examinations, puts emphasis on the important role of school and family in relation to women's breast screening behaviours.

*26: Education is a very important issue for women's screening behaviour later on in their lives. Young people should receive information on sexual relationships, prevention and early detection. Children who have been educated on such issues from*

*their school, they are even able to positively influence later on their parents who have different perceptions of early detection and preventive medicine. On the contrary, it is difficult for old people and adults to receive a complete education on such issues when they are not at all familiar with health issues from a younger age. I mean that it is much easier for a young person to understand issues around early detection of cancer, without having already any taboos or fears towards such diseases. Young people are more open minded and are still positive and brave in their life to realize and understand issue about cancer diseases and the role of early detection.*

Interestingly, it was found that women who adhered to regular mammograms had also adhered to other early detecting gynaecological examinations, such as Papanikolaou smear test, from a young age. Therefore, their participation in regular mammography screening tests could be characterized as a logical continuity of their participation in early detecting tests from a young age. The following interviewee, being 65 years old, was a regular participant in gynaecological screening from a young age. She had been treated for breast cancer ten years ago.

*19: It is not only that I adhered to mammography screening many years ago; it is also that I started smear test examination since I was young. For many years now I do all the gynaecological early detecting tests, and my doctor examines me too.*

The following extract is also from a regular participant in gynaecological screening from a young age.

*28: It's not that I am not afraid ... it is that I have been familiarized with participation in such screening tests from a young age as also in other gynaecological tests from a young age.*

The following interviewee, being a regular screening participant, emphasized the importance of children's education on such health issues, since they could educate and positively influence their parents.

*25: When my children were younger and were going to the secondary school, at a private one though, they had been informed about gynaecological cancers, and their*

*early detection. And when they returned from school they asked me whether I also do those gynaecological early detection examinations. That definitely influenced me a lot then, towards my adherence to breast screening examinations. It is very important for young people to be educated on such issues, not only for themselves later on in their life, but also for the encouragement they provide to their parents, who might not have the above education. This is very important I think, because your children can make you think a bit different about such issues, and they have lot of influence on you, as we [parents] have on them.*

Finally, husbands' encouragement and support to their wives was also seen as an important influence in relation to women's regular participation in mammography screening. The following abstract supports this view:

*30: Since I was 33 years old I had been visiting my personal mastologist [breast clinical specialist] who was at a big city, quite far away from the village I used to live. My husband stood by me a lot, with my decision to have the particular doctor and to adhere to regular breast screening. He was the one to drive me to that big city every time I was visiting my doctor. But my nature is to care for myself a lot, so I want to participate in regular breast screening.*

Husbands' support to their wives who had been treated for breast cancer in the past was also an essential issue and encouragement for those women to overcome their fears related to their treatment and survival. The following women, being regular participants in breast screening and breast cancer survivors, supported the above issue.

*19: I was afraid when the doctors detected some lumps in my breast ... But my husband also helped me and encouraged me a lot within the whole treatment procedure. Such encouragement was of high importance to me.*

*14: My husband and all the people from my immediate social network treated me very nice. My husband was driving me to the hospital for my treatment on a daily basis. This helped me a lot psychologically, so that I was able even to support other women who were in the same treatment position as I was.*

On the other hand, family exemplars were also identified as having a negative influence in relation to women's participation in mammography screening. Details of the negative effect family and family exemplars had on women's breast screening behaviour are presented below.

Interestingly, it was revealed from abstainers' interviews that their mother and/or sister abstained from regular mammography screening due to health taboos and fears they had of screening examinations and cancer. Therefore, it would appear they had in some way transferred their fear and taboos to the young female members of the family. The following two extracts by women who abstained from mammography screening, offer support to this suggestion.

*12: I think that we generally have in our family the same fear towards doctors and such gynaecological cancers' early detection tests. Similarly to me, my two sisters have never had a mammography screening test. So we act like this as a family, and we believe that cancer will never happen to us, and that we will never develop something bad [cancer]. In my family, we are all thinking this way, and we postpone such examinations all the time. I believe that what really matters in women's perceptions and screening behaviour is the exemplars and general education they get from a young age from their immediate network. So, with these kinds of influences, women create a specific ideology and perception towards gynaecological early detecting tests, and they have a respective screening behaviour.*

*31: I have never had a mammography screening test, and I will never have one. My sister also has the same behaviour and we have the same perceptions of breast screening.*

Abstainers and non-regular participants in mammography screening reported that they had no education from their family or school on breast cancer and its early detection. Taboos and fear of even talking about cancer, its early detection and gynaecological examinations characterized these families. The following interviewee, a non-regular participant in breast screening, reported that her lack of familiarization with screening and lack of conversations regarding such issues within her family, resulted in her abstinence from breast screening.

*32: As far as it concerns me, since I am also one of those women who have not adhered to regular breast screening, I have never been informed from my school about cancer and screening. There was no reference in general to such health issues, and we were not allowed to have such queries when we were young in our school. It was a taboo theme, and no-one probably knew what and how to inform us on gynaecological examinations. Moreover, I had never received any kind of information on these issues from my mother and my general family network. So, I was able to receive information only when some friends were referring to these gynaecological tests. But the majority of my friends did not do any gynaecological tests, and we did not discuss such issues. So, I was brought up with the perception that women visit a gynaecologist only when they have a problem or pain. I have never heard anything about cancer early detection from my immediate network in which I was brought up. So, when I firstly heard about it from the television, I got panicked, since this then was something completely new for me.*

Another interviewee, an abstainer from breast screening in her early 40s, reported her need to be educated and encouraged about participation in breast screening from her immediate social network. As she emphasized in the extract below, she saw her mother as being the ideal person to act as an exemplar and educator on breast screening examinations. Through this route she notes how it would possibly be able to get familiar and comfortable with such examinations.

*10: First of all, before starting to ever participate in regular mammography screening, I would prefer my mother to have done it before, since she has never gone for this test. So, I would like her to be the first person to inform me about this [early detection of breast cancer] and mammography screening. My mother would be the ideal person to talk to me and inform me about such examinations, so that I would be able later on to decide what I want to do. I mean that after receiving the necessary education from my mother, I would be able to resort to the corresponding doctors for more information on this issue. But since there never was any such kind of education from my family, and my immediate social network, it is very difficult for me to get into the next step and get informed from doctors on gynaecological screening. So, it is also very difficult for me to participate in regular mammography screening. I need to listen*



*and to discuss about breast screening with a person who belongs to my immediate network first, with whom I will feel comfortable with. I need such a person who participates in such examinations to tell me about her experiences from such examinations and then, I will think about it and I will decide whether I want to also participate or not.*

The following extract, reported by a non-regular participant who had multiple sclerosis, notes the lack of communication among the family members and the lack of parents' interest to educate their children on health issues.

*26: My parents were strict people, they did not talk about such issues [breast cancer, gynaecological screening], so we [the children] knew nothing about them. We never talked about these issues with my parents, they never advised me. I took no education from them. I was trying to get informed for gynaecological and sexual issues from magazines and encyclopaedias.*

However, some of the interviewees that had not received any special education on breast screening examinations from their parents and family members had been participating in mammography screening test from a young age. As they noted, lack of information from the family was due to the much smaller number of breast cancer incidences making the disease not as big a threat as it is today. The following two extracts, by regular participants in mammography screening, support the above assertion.

*33: My mother never informed me about cancer, gynaecological screening and similar themes when I was young. But, back in that period women were living under different circumstances and the cancer incidences were not so frequent. So cancer and its early detection was not a common theme to discuss.*

*29: To be honest, my mother had never had mammography screening and now she is 87 years old. The living circumstances were completely different in that period of time, as it concerns cancer incidences, and perceptions towards it and its early detection. I was the one who took her to the doctor recently to have a breast check.*

Similarly, the following interviewee, despite the lack of communication with her family members, as well as the lack of education on health issues, developed a positive ideology towards regular gynaecological and breast screening tests. However, the particular interviewee reports being influenced from other sources, such as friends, and her personal gynaecologist whom she trusted from a young age, while she was apart from her family for years.

*23: We never talked about such issues [health issues and gynaecological screening] with my mother, and we didn't have a very good communication. I have also lived for many years alone in Athens, since I was a young independent girl, and I visit my mother quite rarely.*

To conclude, the influence women had from their family has been identified as a most important factor influencing their breast screening behaviour in this particular cohort of women. The level of education women had concerning cancer and screening from their family and school, appeared to influence the level of their familiarity with breast screening later on in their lives. It was also identified by these women that a family's general perceptions towards breast cancer in turn influenced women's perceptions. Additionally, the mothers' and/or older sisters' breast screening behaviour acted as an exemplar for the majority of the interviewees. Thus, the impact of 'family' has been identified as influential (both positively and negatively) in relation to subsequent breast screening behaviours.

#### **5.4.1.2 Close friends' influence and women's participation in breast screening**

A second source of influence for women who took part in this research was their female friends. Depending on the communication women had with their friends, many of them had the chance to receive information on breast cancer and screening in an informal way. These influences are explored and presented in this section.

Many of the regular participants in breast screening had similar behaviour to that of their close friends. These women had been influenced by the conversations and perceptions of their friends in relation to breast screening. The following two extracts, stated by regular participants of breast screening, highlights their friends' similar perception of breast screening and gynaecological tests.

*33: I personally don't hesitate to talk about such issues [cancer and cancer screening], since I really want to get informed about these. My friends have also the same reaction as me, and we talk a lot about such issues, feeling very comfortable. I talk about these issues with people who are familiar to me and who I trust.*

*17: In general, I was reading a lot, and I took lots of information on these issues from my school and family. I've also become very sensitized to gynaecological screening from my friends and my general immediate social network. We often had discussions among friends, since we were young about such examinations and cancer issues. We were going for smear test since we were 20 years old, so my friends had the same positive screening behaviour and perception towards screening as me. I was influenced and informed by my network, my mother, friends, and my mother's friends.*

Feminism was identified by these interviewees as the core reason of open conversations on breast screening among females, and particularly friends. Interestingly, those women who described themselves as feminists appeared to feel more comfortable with having discussions related to cancer, breast cancer and screening, without having any taboos or fears. They also appeared more comfortable with their efforts to familiarize themselves with early detection gynaecological tests. These women emphasized the important influence they received from a female social network. The next extract, from a regular participant in breast screening, supports this suggestion.

*14: To tell you the truth, since I have been a feminist, in 1970 after dictatorship, I have had very often discussions with my friends and my general social networks without feeling uncomfortable at all. I learned to talk about such issues since I joined feminism, as we were all talking free to each other about such issues [cancer and gynaecological screening] in that group. And this is very important for me, because now I feel more free to communicate with other people on such issues, and I am more communicative. And the people who belong to my immediate social network have the same perceptions as me and they have the same screening behaviour. The same happens with my friends as well.*

Conversely, women who abstained from regular mammography screening had a different relationship with their friends, and did not engage in health and screening conversations. The next interviewee, being an abstainer from regular breast screening, reported the similar behaviour of her friends in relation to a lack of interest in discussing screening.

*22: Among friends, we rarely speak about such themes [cancer and screening]. I remember that we were just reminding each other through a brief reference to breast screening that we should have mammograms, but we all stuck to the theory rather than going further to the action and having a mammogram. It is difficult in general to pass from theory into action. For some people it is easy to do so, and for others not.*

Nevertheless, some of those women had identified the particular lack of conversation with their friends, and expressed the need for a closer relationship and more conversations on breast cancer and screening. Some of the women who abstained from breast screening emphasized the strong influence they could get from other women from their immediate social network, compared to the influence they received from doctors. They reported that an open discussion among female friends could familiarize them with early detection of breast cancer, compared to the strict and inadequate way information was provided by doctors. The following two extracts, by abstainers from regular mammography screening, illustrate this issue:

*12: I would not be influenced by a doctor to participate in regular mammography screening. I would prefer to be advised by a close friend of mine, who would already have a positive mammography screening test experience. I mean that if a friend of mine had a nice experience with mammography screening and could persuade me that it is a necessary examination I would probably go for it. Otherwise, I would go for such an examination, only if my doctor detects a lump or something similar in my breast.*

*10: It would be much better if I had the opportunity to discuss such things within a group of female friends' rather than be advised by a doctor. On the contrary, we never talk about such issues with my friends and I would really like to start discussing it with them. I mean that within such kind of discussions, I would be able to familiarize*

*myself with the whole theme [cancer and breast screening] within a more comfortable, easy and relaxed way. This could have happened within a familiar network, which is my family and friends, contrary to the unemotional “white blouse” [doctors].*

Additionally, a substantial number of women reported the encouragement they got from their friends towards their regular participation in mammography screening. It appeared that for some of them the accompaniment of a close friend during breast screening examinations comprised an essential form of psychological encouragement to deal with such a new experience. They felt much more comfortable facing such examinations as well as the diagnosis from their doctor. The next three extracts, reported by regular participants, support the above concept.

*23: I started going to a gynaecologist with the company of a friend of mine and later on for mammograms too.*

*28: One of my friends persuaded me in the past to go for the first mammogram, since she was going too.*

*9: Last year, I was supposed to have my annual mammogram, but I was postponing it all the time. So we decided at work, all the female colleagues, with whom we were also friends to book our appointments for a mammogram for the same day. So we persuaded each other to finally book an appointment.*

It was revealed that similar to the influence women had from their family, their friends also appeared to play an essential role in relation to their breast screening behaviour. It appears that women feel comfortable with members of their immediate social network, with whom they can discuss screening. Discussions between female friends comprised an influencing factor towards the creation of a positive ideology for breast screening. The existence of a close, communicative relationship among female friends sensitized them to early detection of breast cancer and provided them with the strength to overcome their fears related to cancer.

#### 5.4.1.3 Personal experiences and breast cancer

In this section, personal experiences and breast cancer experiences arising from the interviewees' immediate social network are investigated. The influences such experiences had on their breast screening behaviour are also explored. There appeared to be two major influences here, those relating to their personal experience of illness and those relating to the experience of a family member or close friend's illness.

For some women, experiences of other diseases had made them change the way they perceived life, and early detection of cancer. These experiences made them establish a balance between their fear of potential breast cancer development in the future and their decision to participate in breast screening. The following interviewee who identified this issue had recently been informed about her mother's breast cancer development. Additionally, she had been diagnosed with glaucoma from a relatively young age, which was responsible for her diminished eyesight. In the following extract, she describes how her illness changed the way she perceived life, by doing her best to be healthy and positive towards her health.

*23: In a way, I am grateful for the disease I have, since from the moment I got ill I realized a lot in my life. I saw my life from a different point of view. After the appearance of this disease I was able to change my priorities, to make clear what I really want from life, and to generally see my life more spherical. I mean that I decided that I want to be healthy and to feel nice about myself. This was a decision I took, after I realized what I wanted. So took action, by participating in regular mammography screening. I could also go from one doctor to the other and cause problems for myself, mainly psychological ones, as happened to my mother. On the contrary, through the shocking experience I had at the beginning of the glaucoma disease, I realized that such diseases and obstacles in our life help us to re-asses our beliefs and our behaviour so far and make us prioritize different and more essential things in our life, making us much stronger.*

Personal experiences with a disease, other than breast cancer, of course did not always produce the same results for all participants. Past or current illnesses led some women to give priority to this illness and be disregardful of breast screening. For example, the

following non-regular participant in mammography screening had multiple sclerosis and a family history of breast cancer.

*26: In my case, due to the fact that I have family history of breast cancer I am a bit more sensitized to participating in breast screening, but on the other hand, either I die now or after 10 years, it is the same for me. I mean that due to my disease now, I just don't want to get paralyzed. So I worry more about the multiple sclerosis I have now, than possible breast cancer in the future.*

Breast screening behaviour was influenced not only by women's personal experiences with a particular illness in the past, but also by the breast cancer experiences of their immediate social network, such as family. Interestingly, for a couple of women, whose family members had developed and died from breast cancer, this had led them to abstain from breast screening. The following woman emphasized the shocking experience she had from the death of her sister due to breast cancer and how this made her not wish to participate in any kind of breast screening examinations.

*31: I personally, due to the fact that I have family history of breast cancer and I have been shocked and scared so much through the experience I had with my sister's terrible death from breast cancer, I am not having mammography screening. I have been very sad throughout the particular experience I had because of my sister's breast cancer was a terrible one, which finally destroyed her whole chest. So this is why I don't go for breast screening, including mammograms and clinical breast examinations, I am afraid. I am not going for such breast examinations and I will never go. I don't even do breast self examination. I am thinking that if it [breast cancer] is going to happen to me, let it happen. I am not going to start thinking of that possibility, and that I am going to get ill and die afterwards, because I believe that if I think and worry about it [breast cancer] and participate in breast screening I will provoke its development. My other sister who is alive also behaves as I do on this issue, due to our shocking and terrible experience we had with our sister's death from breast cancer.*

However, this particular interviewee also stated that she was dissatisfied with her sister's overall treatment procedure and doctors' behaviour, diagnosis, suggestions

and psychological support. These negative experiences not only discouraged her from participating in regular breast screening, but also raised her anger and distrust towards doctors.

*31: My fear of cancer was further accompanied by my sadness that arose from my sister's experience with breast cancer and death, as well as doctors' diagnostic and treatment' mistakes. I do not accuse my sister of not following all doctors' treatment suggestions. She believed in spells rather than admitting that she had breast cancer, because she was ill, despaired and easily deluded by other people. Also different diagnosis and treatment suggested by different doctors confused her and made her distrust them. So if I am going to develop breast cancer, I prefer to die without surgeries and treatments, without doctors' help. I don't trust any of them, after my sisters' experience and death. I am very angry and I will never forget my sister's tribulation. After such an experience, my emotions do not allow me to get involved with early detection of breast cancer.*

Similarly, other women who had lost a close family member from cancer and who had experienced cancer treatment and death had negative feelings about early detection of breast cancer for a substantial period after their relatives' death. An example of the above issue was the following non-regular participant in breast screening, who started her participation due to a pain she had.

*28: When my husband developed cancer I could not believe it, it was difficult for me to realise that such a disease was developed to him; even if I stood by him for many months at the hospital. So, due to that bad experience with my husband's illness, who finally died, I don't want to worry about such issues anymore. If it [cancer] is going to happen to me, let it first happen and then I will search for further help. I haven't talked about such feelings and perceptions I have with anybody, even though I want to, because it is not that easy to find moral people who make me feel comfortable and who really want to know the truth and help me in a way, as you do now.*

It was apparent that women who decided not to participate in regular mammography screening had experienced a lack of psychological support after their relative's death. Moreover, women who reacted negatively towards breast screening described



shocking experiences related to the illness and ultimate death of their close family members. For some of them, such experiences led to fear of cancer, and to their abstinence from breast screening.

Despite these findings, in this study similar experiences also had the opposite effect for the majority of the participants. Having a relative or friend with breast cancer led many women to undertake regular mammograms. A key issue revealed by the majority of women who adhered to regular mammograms, either after their 40s or later in their lives, was the impact of another women's death, from their immediate social network. Experiencing possible negative consequences of breast cancer made them realize it could possibly happen to them as well. This drove them to adhere to regular mammography screening, since they perceived it as a way to protect their health from a possible late-stage breast cancer diagnosis. The above issue is supported by the next quote, wherein a regular participant in mammography screening test reported her experiences with people who had breast cancer, and how this influenced her perceptions of breast screening and cancer and the disease.

*20: I have also been influenced from the death of a colleague; she was a friend of mine. She was 35 years old and she had breast cancer. And because until that moment I thought a woman doesn't die that easily from breast cancer, I was shocked when she died from the disease, because until that moment I had the perception that a person could not die that easily from breast cancer. That incident made me realize the threat of breast cancer, and how dangerous it can be if not detected at an early stage. I also had a similar experience with a neighbour friend who also died quickly after she had been diagnosed ... So, after these two incidences I said to myself that "either you like it or not, you are now going to have mammograms on a regular basis" ... It is not necessary to wait until it [cancer] "knocks on my door" in order to start participating in such tests; if I wait until then it will be too late.*

Such negative experiences from the immediate social network not only made women start having mammograms, but also encouraged them to continue regular screening. The following interviewee, who was a regular participant from a young age, supported the above issue.

*5: What I would like to add here, is that I have experienced the death of a very good friend of mine from breast cancer, and that is what made me even more supportive of adherence to regular mammography screening.*

Additionally, experiences from family members' death due to any disease (not necessarily cancer) also played a role in the continuation of regular breast screening. As a couple of women supported, after losing a close family member, they felt no fear of death anymore. As a consequence, they felt no fear of breast cancer development, and they did not hesitate to continue their regular participation in mammography screening. As noted by a regular participant:

*30: After the death of my child, I feel more familiarised with death, so, that's the reason why I am doing all breast screening tests regularly, and I am not panicked at all or afraid to have them. I honestly confess to you that I don't fear death or cancer. And most importantly, it gives me the feeling of relief when I get the diagnosis of my mammography screening, mainly because the tests are negative so far. This is a relief for me and my family.*

Apart from the direct negative experiences of the disease to relatives and friends, other factors associated with the immediate social network influenced some participants positively towards regular mammography screening. A substantial number of women emphasized the importance of being healthy in order to be able to raise their children, and to be next to their family. Their maternal instinct to protect their children was enhanced when those women experienced their friends' deaths from breast cancer (those who left behind children). The following 2 regular participants in breast screening specifically supported this issue.

*24: By the way, I was shocked by the death of a friend who had breast cancer, and her two young children are now without their mum. Everything that had happened to that woman during her disease and after her death shocked me a lot. So after that experience, I have got very scared and when I was pregnant I kept visiting my doctor very often, to make sure that I would be sure that my breast was healthy. Also after my three deliveries, I have been going to the "x" public oncology hospital in Athens to get a mammography screening test in order to check my breast.*

*30: First of all, since I was a young lady I cared about my health in general, and I was having all the necessary gynaecological screening tests, in order to be healthy and therefore able to raise my children and be next to my family.*

To summarize, it has been identified that the experiences women had associated with other diseases and cancer strongly influenced the way they perceived life, cancer and breast screening. Their personal experiences with other diseases in the past had a dual effect on their current screening behaviour, depending mainly on the severity of their disease.

Women's experiences either with cancer or treatment for breast cancer in their family or close friends played an essential role in shaping their perception of the disease and consequently its early detection. In such cases, women felt fear at the possibility of developing breast cancer especially after experiencing a friend or relative's death from cancer. This led the majority of them to act against a possible scenario of identifying breast cancer at a late stage by having regular breast screening.

However, women's reactions to such experiences were not only characterized by their participation in mammography test; some of them hesitated or refused to have screening after the experience of a close family member's death due to cancer.

## **5.4.2 Broader Social Networks**

In the previous sections, the influences of the immediate social network, including relatives and friends was explored. In this section, the influences women had from their interaction with their broader social network are explored. Such factors include: a) the mass media and possible stereotypes they generate; b) the working environment and the associations women belonged to; and c) the personal gynaecologist.

### **5.4.2.1 The mass media**

Many of the participants of regular mammography screening supported the importance of the mass media in relation to informing women through articles and magazines, educative television programs and breast cancer campaigns. Such

information appeared to influence breast screening behaviours in some women. For example, the following quote is from a 62 year old woman who outlines her interaction with her social networks and their impact on her thoughts and behaviour in relation to screening.

*21: My social network is sensitized to breast screening and early detection of breast cancer, but I also receive lots of information from the mass media. I think it is very useful for people to get informed about such health threats [such as breast cancer]. My friends and I, after watching soap operas [on TV]s on stories about this disease, were chatting about them and were recalling our friends who also had breast cancer and who finally died from the disease. All of these stories were distressing and made us commune and think that we may also be threatened by that disease ... I think that, at least throughout these TV shows we begin to wonder and seriously think a bit more about early detecting examinations of this disease. I think that, this way, we want to ask and learn more about it. And the most important is that these shows make us realize the extent of this disease and we suddenly feel threatened by a possible diagnosis of breast cancer in the future. And by getting afraid we want to act against any such possibility, and I think this is very important.*

The psychological encouragement and education through other women's stories associated with breast cancer had a positive effect on women's familiarization with the disease and its early detection. Another interviewee, who had recently started participating in regular mammography screening and intended to continue in the future, explained the importance of other women's stories projected through television programs.

*20: I have been influenced a lot by women who have told their stories about breast cancer through television. These women had been treated for breast cancer and they have survived. I have been positively influenced by their experiences.*

Breast cancer campaigns also had an important role. The interviewee that follows had not yet started having mammography screening, because she had no family history of breast cancer and was under 40 years old. However, she was positive about starting in the future.

*2: Generally, I think that this disease [breast cancer] affects lots of women in Greece nowadays. Therefore, we have seen lots of campaigns and their advertisements, presented by famous persons, who emphasize the importance of breast cancer early detection. All these information and messages are very important, I think, and I am very happy for that. So, I think that through all these, women get sensitised about breast cancer and consequently are led to participate in regular breast screening. I am one of these women, and I also intend to participate in regular breast screening in the future.*

The following interviewee similarly emphasized how mass media helped her to become informed about breast cancer early detection.

*17: I am not saying that I am a kind of maniac towards this issue [early detection of breast cancer], because it is not also nice to be terribly afraid of any disease. I am just trying to find time to do some basic things, such as watching health educative programs in television and reading a few health related articles, in order to get a bit informed on early detection of breast cancer.*

On the other hand, women who were not familiar with cancer and breast screening perceived the messages and information provided from mass media in a negative way. Interestingly, the following non-regular participant in breast screening presented a combination of influences women receive throughout their life, including her negative reaction to information received from mass media.

*32: I believe that a woman's decision regarding her participation in mammography screening or not, depends mainly on her general education and motivators she gets throughout her life. Motivators mainly from television, because as I remember, three to four years ago, there was a cancer campaign advertisement selling blouses with a specific symbol on them, which made me feel a lot of fear about breast cancer. What I want to say is that I did not want to hear about these advertisements at all. This was because through those advertisements on the television, it appeared to me that this disease [breast cancer] is a very frequent one, and this made me think that it could happen to me too. The way this advertisement was presented, gave me the impression*

*that one day all women will be threatened. So, it made me even change the television channel in order not to hear about it at all, because I did not want to believe it. In other words, this TV advertisement had the opposite effect on me; it did not sensitize me to the disease ... It stopped me from even thinking and also taking part in its early detection.*

Similarly, the following interviewee, who started regular mammography screening due to breast pain, also suggested that the approach of informing women should be gradual and gentle. This could help them easily accept new information, and avoid panic and aversion.

*28: I think it is very important to inform and encourage women to participate in early detection of breast cancer without terrifying them. The whole procedure of women's education and information on this issue should be made within an easy, simple and gentle way, in order to naturally familiarize them with breast cancer and its early detecting examinations. Women's approach has to be gentle so they won't get terrified about breast cancer.*

Stereotypes generated by the mass media related to women's first child-bearing age and prevention of breast cancer were discussed by a regular participant in breast screening. Interestingly, she presented the way such stereotypes impact on women's professional role, by creating obstacles regarding their professional career. As she stated, all of these stereotypes were mainly spread by television, women's articles and magazines with the essential contribution of doctors, creating confusion and anxiety about women's lifestyles.

*23: Many of my friends have told me that their doctors emphasized to them that they must have children; otherwise they will likely develop breast cancer. I believe this is incorrect. My mother, like many other women I know, got married and had children at a very young age. However, she developed breast cancer recently. For me, there is no relation between having children at a young age and development of breast cancer. I believe that what doctors claim and disseminate about women's maternal age and breast cancer development is not correct, and this way, they aggravate women with extra taboos. What I mean is that doctors are forcing women to make that kind of*

*personal decision, such as getting married and having children at a young age, because of women's fear of possibly developing breast cancer. Many of the women I know, had children before their thirties, even if they were not sure they had found the appropriate husband, even if they were not generally ready to get married. Their doctors told them that women over thirty are viewed as mature in relation to child-bearing. I have also heard from mass media the same theory, which is unacceptable from my point of view.*

To summarize, from these interviews it has been identified that the influence of the mass media can lead to both abstinence from regular mammography screening as well as adherence to it. For some women information provided by mass media comprised one of the sources from which they could get the basic education on breast screening and cancer disease. Interestingly, other women's experiences with breast cancer as presented in TV shows had led a substantial number of interviewees to participate in breast screening. Nevertheless, the particular effect of the mass media differed among women, since it also depended on women's primary knowledge and education. Thus, mass media also led to confusion and had created or enhanced fears about cancer and breast screening, according to some interviewees.

#### **5.4.2.2 Women's associations**

The educative and informative role women's associations had on some of the interviewees' breast screening behaviour is presented in this section. The differentiation between these associations and the way women appreciated such information is analysed here. Finally, obligatory annual gynaecological examinations, including mammography screening, within a couple of interviewee's working environments are presented accompanied by their influence to women's breast screening behaviour.

Reference has been made to some women's associations and other women's groups' efforts to educate their members on breast screening and breast cancer. The following interviewee referred to the role of female associations towards women's realisation of the importance of gynaecological screening. Being a member of another political women's group, she emphasized the important influence her membership had on her positive perception of breast screening examinations and early detection.

*13: I personally have a positive attitude towards prevention and early detection in general and also of breast cancer. In my life I became a member of a variety of female associations and one of them was the «x» political women's association. As a member of these particular associations, I've been informed more about breast cancer, its early detection and particularly mammography screening. I owe my positive attitude and sensitization towards early detection of breast cancer to my incorporation in this women's association, even though I also had a similar background and influence from my family too.*

Another interviewee, being a regular participant in mammography screening, supported the advantages women can receive when they join a women's association, particularly in the provincial areas.

*21: I am also a member of an association in a district city, because my origin is from that city, and that association informs women about health issues in general. I think that it is good for someone to be member of an association, because many of them try to inform their members.*

Nevertheless, not all women's associations were identified as helpful and informative. As the following participant reported, the educative role of each association on women's health depends on its administrative members and their real aims and interests.

*30: Usually, associations such as this one that I belong to now, are established by women's companies, who are all already close friends, and try to do their best for the association they have established. On the other hand, if the administrating members of an association do not have anything in common prior to the establishment of the association, then, these associations are usually a superficial meeting of women. In general, associations differ, but there are many, which are composed of wealthy women that aim to develop their relationships within a smart society, or get developed in other sections by using their membership to such a women's association. Only a few associations really concentrate on the benefit of their members as also the*



*advancement of their education. So it depends on the focus and the real aims of each association.*

It is also interesting to note that during some of the interviews, reference was made to the dissatisfaction and uncomfortable feeling of attending educative breast screening seminars, organized by women's associations. Due to different backgrounds and education, not all women felt ready to receive information on breast screening, even if scheduled by the association they belonged to. The extract that follows, reported by a 65 year-old regular participant in mammography screening due to breast pain she initially had, supports the above issue.

*28: I wouldn't go anyway to those seminars that our association had organized. This is because it sounded boring to me to spend a few hours of my time there and listen to all these terrible things about this disease and its early detection and treatment. I don't find it necessary to know everything around this disease [breast cancer], because I would be terrified afterwards.*

In addition to the effort some women's associations made to educate their members, for a couple of interviewees their job environment influenced them positively in relation to having early detecting tests. Within these women's job, it was obligatory to undertake a list of gynaecological tests on an annual basis. These included smear test and mammography screening. The following interviewee, being a 67 year-old regular participant of breast screening, who had also been treated for breast cancer in the past, reported:

*19: I was working at the «x» national company and I had been informed from my work that I had to do all these gynaecological examinations on an annual basis. It was obligatory for our job to have these examinations after a particular age.*

Women's associations appeared to play an important role, as reported from a couple of interviewees, on informing them about breast screening and gynaecological screening tests in general. Reference was made to the helpful role of feminism among women's associations towards their familiarisation with the protection of their health and consequently cancer screening.

Nevertheless, regardless of some associations' effort to educate on breast cancer and screening, some of the members refused to attend the respective seminars. The level of women's sensitization on screening depended also on their background, education and views they already had regarding this issue. Finally, for a couple of women, their job played an active role towards promoting participation in regular gynaecological screening tests.

#### **5.4.2.3 Information provided by doctors**

Apart from the information women usually received from the mass media, breast cancer campaigns, women's associations and their employers, their gynaecologists were also reported as additional influences in relation to their breast screening behaviour. This is explored below.

The relationship and communication women had with their doctor appeared to be important. Interestingly, women who had a permanent gynaecologist had built up a trusting relationship with them. The majority of them had mammography screening on an approximately annual basis. They perceived their permanent gynaecologist as a friend and trusted person with whom they could have an open discussion about their concerns. The following three interviewees, being all regular participants in mammography screening, expressed this issue, putting emphasis on the trusting relationship they had with their gynaecologist.

*23: I know a lot about this issue [gynaecological cancers]. I read a lot and talk a lot about it with my personal gynaecologist. I am very lucky to have this gynaecologist since I was 20, because we have a very good relationship and communication and she has always treated me very well. I think this helped a lot [regarding her behaviour towards gynaecological cancer and their early detection]. In other words, it is not only that I read a lot and that I speak about these issues with my friends, but I also have an excellent doctor and this is what really matters for me. I feel very comfortable with her, since she is an excellent scientist and person as well.*

*20: I have a very good relationship with my doctor, since he is my personal doctor for many years now, even before I had children.*

*5: I usually get informed from my gynaecologist, who I fully trust and I will do whatever he suggests me to do.*

Such a trusting, permanent relationship between women and their gynaecologist and later on with their mastologist (clinical breast specialist) provided them with the courage and psychological strength to overcome their fears of possibly developing breast cancer in the future.

*14: I do not feel crazy because I don't fear breast cancer. I also feel awkward and I have the feeling of fear every time I go for such screening tests, but what makes me optimistic about the diagnosis and feel calm is that I trust my doctor. I mean that I trust my doctor so much and this is what makes me feel this way, which is very good for me I think.*

The above woman, being a regular participant in breast screening, had recently been treated for breast cancer. The positive outcome throughout her treatment increased the level of trust she had towards her personal doctor. As she reported in the next extract, during her past regular breast screening procedure and her recent treatment for breast cancer, her doctor provided her with the necessary information and psychological support.

*14: My doctor informed me about all the details of my treatment, and everything he told me really happened at the end. I went to a doctor who was very experienced in breast cancer treatments and throughout my treatment and communication with him, I trusted him even more. Now, I feel like he is the God for me; I fully trust him, and I will do whatever he says to me. There is chumminess between us, and I do not hesitate to ask him anything and express my concerns about anything. Now, after my treatment, I believe that breast cancer can be treated if detected at an early stage. My doctor has also psychologically encouraged me a lot during my treatment.*

It appeared that trusting doctors' advice and suggestions was an important influence in relation to breast screening behaviour. Moreover, emphasis on women's psychological needs and support was made, throughout their relationship with doctors.

On the other hand, there were a substantial number of women who reported lack of information from doctors. Interestingly, there were reports about doctors who did not pay much attention to informing women about mammography screening. The following interviewee, who was a new regular participant, while being hesitant to start having mammography screening until recently, supported this point.

*20: No, we don't get into many details with our doctors. My doctor doesn't inform me much, unless I ask him something. Maybe he does this in order not to distress me, since he knows I don't have any family history of breast cancer. I receive information mainly from the television, breast cancer campaign advertisements, magazines, but not from my doctor. He just told me that I will have to start having mammography screening on an annual basis after becoming thirty-eight; I finally started a bit later.*

Women, who could not have a permanent gynaecologist, particularly in the public health care sector, received less information about the role of gynaecological screening tests. The following two extracts, reported by non-regular participants, support not only the lack of information from doctors, but also the lack of communication with them.

*18: I haven't been informed much about breast screening from doctors, but I have been informed from what I have read in women's magazines and what I have heard from friends. In general, doctors tell me just the basics; we don't talk much with each other. They just told me that it will be good for me to start participating in mammography screening.*

*32: My doctor doesn't generally get into many details about breast screening. He just tells me that I have to undertake a list of gynaecological tests, such as the smear test and mammography screening. And to be honest I don't think there is a need to talk much about these issues [breast cancer and its early detection], since I don't have a gynaecological problem.*

Some of the non-regular participants in mammography screening believed that it was not necessary for them to get informed about such issues, since they had not had any gynaecological problems yet. They visited their personal gynaecologist only in the

case of a health problem. A couple of women who abstained from all gynaecological screening tests perceived their visit to their personal gynaecologist as being only for maternity care. The next extract, reported by a 60 year-old abstainer, supports this point. This particular interviewee also referred to the family responsibilities she had as one of the reasons of her lack of time to visit her doctor.

*22: I almost never visit my personal doctor. It's been a long time since visiting him, since I delivered my children to be honest. And just because my life was so busy with work at home and taking care of my children, I never had time to visit him.*

Finally, it was suggested through the interviewees' accounts that health care providers, particularly doctors, need further education on how to psychologically support women and inform them about breast screening. In other words, emphasis on health care providers' communicative skills in relation to women's actual needs was given. The following is from a regular participant of breast screening:

*23: First of all, I believe that health care providers should be informed about our needs to be treated holistically. Almost all the doctors I visit give me the impression that they have no idea about our real needs. I admit that many of them are very good scientists but they have not realised what the real needs of women/patients are. Thus, health care providers should appropriately approach and inform women on breast cancer and its early detection.*

To conclude, a trustful and communicative relationship between women and their permanent, personal doctor appeared to influence their breast screening participation to a high extent. On the other hand, women who did not visit a gynaecologist or who were lacking in such a tendency were more hesitant to participate in regular breast screening.

### 5.4.3 Conclusion

The information women receive from their social networks appears to play an important role in relation to their breast screening behaviour. Education from a young age was identified as a key issue for their future breast screening behaviour. Almost all of the interviewees ranked first the influence they had from their family, school and close friends. Thus, the interviewees' behaviour towards breast screening depended to a great extent on the education they had from their immediate social network.

Regular participants in breast screening reported that they had been influenced by similar behaviours on the part of their female family members. Similarly, women who had a negative perception of breast screening were influenced by their family members' abstinence from mammography screening. Additionally, for most of the abstainers, their family had a negative view towards gynaecological screening, and expressed a number of cancer taboos. These women had no education on gynaecological cancers from their school and were not familiar with breast cancer and its early detection.

Women's close friends appeared to be a further strong influence. It appeared that women who had open conversations about breast screening with their friends were more likely to participate in regular mammography screening. Interestingly, participants' close friends had a similar positive view on breast screening. On the other hand, abstainers were usually lacking or even avoided conversations about these issues with their friends.

The personal experiences women had with other diseases in the past, as well as experiences of friends or relatives having cancer, appeared to be very influential in relation to their own screening behaviour. Interestingly, such experiences for the majority of women caused them to re-assess their health and life priorities. This re-assessment led them to take action to protect themselves from possibly developing late-stage breast cancer. Thus, breast cancer experiences that arose from women's immediate social networks led to many women's participation in regular mammography screening.

Women's broader social network, including the mass media, women's association, working environment and the personal doctor/gynaecologist, also appeared to be influential. However, their role was probably not that determinative compared to the immediate social network. Information provided by the mass media appeared to have an impact in relation to participation in breast screening. More specifically, breast cancer survivors' stories broadcast via the mass media seemed to have high influence. On the other hand, such information lacked the interpersonal and communicative relationship that exists between women and their personal doctor. Reference was also made to the stereotypes generated by the mass media, in relation to women's age at their first pregnancy and the prevention of breast cancer. Women's associations and job appeared to be influential in relation to some women's participation in mammography screening.

Finally, the personal relationship women had with their gynaecologist contributed to their knowledge around breast cancer and breast screening. It was identified that women who had a trusted and communicative relationship with their gynaecologists were more likely to adhere to early detecting examinations. On the contrary, women who had no permanent gynaecologist were less likely to participate regularly in mammography screening. Even if these influences had an impact, in some cases it did not appear to change their perceptions already created by their immediate social network. In other words, women who already had built a strong perception of breast cancer and screening from a young age could not easily change their behaviour, whatever the influence.

## 5.5 Engagement with the Breast Screening Process

This section describes participants' experiences of mammography screening that arose from engagement in the screening process and influenced their view of mammography screening test. It is divided in two parts. The first part considers obstacles in accessing breast screening centres. The second part is related to the relationship between women and their doctors during the breast screening process.

### 5.5.1 Access to Breast Screening Centres

Access to breast screening centres was a problem for many women in this study due to a variety of obstacles, which in turn appeared to leave many interviewees with negative views about mammography screening. One of the obstacles women faced was the long waiting list until they could have a mammogram. Since there is no national breast screening program in Greece, women are not written to or reminded to undergo their regular mammography screening test. Thus, those who want to have one need to call for an appointment at one of the few public oncology hospitals or breast screening clinics. As a consequence, a high number of women resort to these centres, creating a long waiting list for a mammogram. The following two regular participants note this concern.

*28: The vast number of people, who resort to the public health care sector, makes things very difficult. Also, one of the disadvantages the public health care sector has is that women have to wait for a long time until their appointment for a mammogram and clinical examination. This is due to the fact that they book you an appointment months after your request.*

*33: At the public sector, you have to wait even for 5 months for a mammogram, after your request to have one.*

Women's discomfort was not limited to the long waiting period until the appointment day. It appeared that they had to face further queues on the day of their appointment. Such conditions comprised an uncomfortable and unhappy experience for most of them, as expressed by two participants quoted below.



*28: The public oncology hospitals are very depressing, since the environment is awful and there are so many people waiting, including patients.*

*21: I went once for breast screening at the “x” university oncology hospital in Athens, because my personal private gynaecologist had detected a breast lump by clinical examination. I usually don't use the public hospital because it is full of people and I have to wait for a long time in order to have a mammogram and clinical examination. This entire situation is a huge discomfort, thus I usually use the private sector.*

For some women, the unpleasant experience in the public sector led to a preference for the private sector. In Greece, a substantial number of women who have national insurance, can have their mammogram at private breast screening centres with the authorization of the public health care sector, or be examined by their private doctor if they prefer. This means that they are charged only a small amount for a mammogram, while they can benefit from the pleasant environment of the private breast screening centres and the quick booking procedure. The following woman had recently started participating in regular mammography screening by following the above procedure.

*9: I had to have some other kinds of examinations and I then got informed, by chance, about the specific procedure I am able to follow in order to have my mammography screening test too. So now, I can resort to specific private breast screening centres, after having authorized these examinations from my national insurance service. By this way, I resort to the specific private breast screening centres, and I don't pay much, since my national insurance covers most of the test's cost. I didn't know about this convenient procedure, maybe because I hadn't searched much about it. But now, my private doctor subscribes the breast examinations I need to have, then I go to my national insurance service for their authorization and finally I book an appointment at any of the specific private breast screening centres. In the past, I didn't know anything about it, and I was resorting only to the private sector, paying the full cost myself for any kind of health examinations I needed to have.*

However, the authorization procedure of the private centres by the public health sector had created distress for a couple of interviewees due to excessive bureaucracy. Many women expressed their annoyance with the national insurance system. The extract

below stated by a regular participant in breast screening, who followed the above procedure, is indicative. She also noted the ‘hypocrisy’ of the public health care sector in relation to the effort to protect women from breast cancer, since she felt there were too many obstacles put in the way in relation to accessing appropriate screening.

*23: Each manager at the national insurance services asks many personal questions in order to finally decide whether to authorize or not the examinations that women's private doctor has subscribed. These questions include issues such as the frequency I undergo mammography screening, the reason I am doing it, whether I have a family history of breast cancer and so on. All this authorization procedure is taking place where other people are queuing behind me, and there is no privacy at all, since everyone can hear my personal health condition and problems. So this whole procedure creates a very unpleasant and uncomfortable situation, where I have to defend myself and justify the reasons why my private doctor has subscribed me a mammography screening test. This is ridiculous for me ... And I feel that there is a huge hypocrisy from the part of the Greek public health care services, who are supposed to help women prevent and early detect breast cancer. On the contrary, they create so many obstacles to women who resort to the public health care sector for such examinations.*

Despite all of the above obstacles, the above woman had to use her national health insurance, since she could not afford the cost of a mammogram at the private sector. However, she consulted a private, trusted doctor for the final diagnosis and clinical breast examination. In the following extract, she emphasized the need for the reduction of such obstacles, since not all women may tolerate the discomfort. In other words, such obstacles can discourage women from engaging in breast screening.

*23: I am a person who tolerated all these obstacles created by the public health care system, since I went again and again to the national insurance department until I get my examinations authorized. But what happens with older people and other women who want to follow the particular procedure? Such women as also many other younger ones who don't have such resistant and insistence power, they will feel disappointed from the whole procedure ... and they will be discouraged to have these*

*early detecting examinations in the future, unless if they can afford the cost of in the private sector.*

In summary, women faced a number of obstacles in relation to their access to public breast screening centres and oncology hospitals. The long waiting list for booking a mammography appointment appeared to be one of the most essential ones. Long bureaucratic procedures in the health care system created discomfort and distress. The unpleasant environment in the public sector, due to the high number of people using the service, also distressed women who had to queue for a long time to be screened on the appointment day. All of the above obstacles led a substantial number of women having to resort to the private sector. However, since this extra cost might not always be affordable, it could be suggested that some women will be discouraged from engaging with breast screening in the future.

### **5.5.2 Experiences of Interaction with Doctors**

Women's experiences with doctors are explored in this section. Despite some of them reporting positive experiences, there were also a variety of negative experiences women had throughout their engagement with the breast screening process. Women's doubts about doctors' true diagnosis and course of action are also investigated.

Many women reported some negative behavioural and communicative characteristics of doctors. Inappropriate ways of delivering a diagnosis was one of them. In certain cases, doctors tended to exaggerate and terrify without even being sure about the final diagnostic outcome. Such an experience caused discomfort with the breast screening process, while some interviewees were discouraged to use particular breast screening centres. The following two extracts, by regular participants, illustrate these issues:

*23: Many doctors, especially those who use the mammography screening devices, discourage you to visit them again. The way and the certainty they talk to you about your previous mammography screening X-rays, and their criticism of your personal doctor's diagnosis is awful. It happened to me once that such a doctor terrified me when he saw my previous mammography screening X-ray, telling me that my doctor didn't see that there was something wrong with my breast. But after I did the*

*mammography screening test at that same day, he finally told me that nothing was wrong. But even if I had something [a malignancy], was that the appropriate way to inform me about? He terrified me. So, he made me resolved not to visit that particular private breast screening centre again.*

*14: One of the times I visited a particular private breast screening centre, after my partial mastectomy, one of those doctors who was using the mammography screening device treated me very badly ... He particularly told me to wait because he wanted to talk to me about something wrong he detected through the mammogram I had on that day. At that very moment I almost got crazy because I felt so scared, but at the end, after also doing a breast ultra sound he informed me that there was nothing wrong. And I told him that he must not talk like this to women, and especially to those ones who already had a mastectomy. I also told him that he should be more careful and cautious to what he says, until he is sure about women's final breast condition and diagnosis, because I almost died from fear by the awful way he initially informed me about my breast condition.*

Reference was made by a couple of women, on what they perceived as the doctors' inappropriate way of examining their breast. The following extract, reported by a regular participant, noted the distant manner of doctors and how they felt they were treated during the breast screening procedure.

*23: Most of the times, doctors are in a hurry, and they examine my breast like it's a pillow and not part of a human being. They press your breast without psychologically preparing you previously. Thereby, I always visit my private permanent doctor afterwards, who I trust very much, for further information.*

The passive role of the radiologists that operate the mammography screening devices was also described by women in this study and many noted how it made them unapproachable and how this was an additional aspect that made women feel uncomfortable with the breast screening procedure. The following interviewee, who participated in regular breast screening, notes this point.

*33: Many radiologists who operate the mammography screening devices and who are actually next to you during the test are not paying much attention to you, and they don't inform you about anything. On the contrary, they tell you to get the proper advice and final diagnosis from your personal doctor.*

#### **5.5.2.1 Distrust in doctors - women's choice**

A substantial number of women reported their concerns about private doctors' suggestions regarding early detecting examinations and treatments. This led some of them to abstain from breast screening. According to these women, doctors, especially the private ones, may not always be acting in the patients' best interest, as some doctors aim to gain financial profits from examinations they persuade women to have. The following interviewee, who abstained from breast screening, claimed the following:

*12: I think there is a general distrust towards doctors from women's part ... Things are not simple, regarding the relationship between them and the doctors who examine them. There is a different way of thinking from the doctors' part ... that one of the financial profit they aim to gain from their patients- women examined. Maybe there is not such an issue at the public sector, but at the private sector doctors may have financial profit, which can gain from unnecessary breast examinations further to mammography screening that they will pursue you to have.*

Such concerns of the doctors' possible financial interests not only created an environment of distrust in doctors, but also a fear of them. This further discouraged women to participate in breast screening. The following extract supports the above issue, referring to an abstainer who was a friend of the following interviewee.

*19: There are lots of women who are afraid of doctors. I have a friend, to whom I suggest to have mammography screening, but she strictly refuses. She says that she is afraid of a possible detection of lump or something similar from the doctor, followed by a suggestion for an unnecessary surgery just for financial profit. She supports that if she starts dealing with doctors, then her life will be ruined. She is afraid of them and she doesn't trust them.*

Concerns regarding possible false negative diagnosis after breast screening examinations were referred to by a new participant to breast screening. She described her friend's case of breast cancer diagnosis, after a false negative diagnosis. Such incidences increased the level of women's concerns about doctors' ability to make a correct diagnosis.

*9: My friend had recently been diagnosed with breast cancer, despite the fact that she was doing mammography screening on a regular basis. Fortunately, she has been treated and she seems to be fine now. But the saddest of all is that her previous doctor had not detected anything at her mammography screening X-ray, while her recent doctor who made the breast cancer diagnosis told her that the first signs of cancer already existed at her previous mammography screening X-ray. I am just thinking of her previous doctor's false negative diagnosis and I can't believe it. It is inconceivable if you think about it ....*

Given the distrust in doctors' diagnoses, women who had adhered to regular mammography screening aimed to find a doctor who they could trust. The majority of these women resorted to a substantial number of doctors until they identified the appropriate one for them. The following extract, stated by a regular participant, supports this idea.

*17: My experience with doctors is not the best. Doctors say very few things ... only the age at which I should start regular mammography screening, which was after thirty five. The decision on participating in regular mammography screening was mine; they didn't inform me about anything really. I have now selected the doctors I am visiting. I have selected a private breast screening centre for the mammography screening test, and the doctors I will visit afterwards for the final diagnosis. I don't believe that doctors in general are completely honest with their patients. I believe that many of them focus on their financial profits, rather than on patients. This is the main reason women cannot trust their suggestions completely.*

Distrust in doctors' diagnosis and the course of action were also expressed by participants who developed a gynaecological problem or started their participation due to a breast problem or pain. They were trying to double-check their personal doctors'

final diagnosis and medical suggestion by visiting two or even more doctors for a second or third opinion. The woman quoted in the following, who started her regular breast screening participation after developing a breast problem, presented her doubts about one of her personal private doctors.

*24: I am doing one mammogram at a public oncology hospital every year, but I visit three different doctors afterwards for the clinical examination and final diagnosis. One of them is at that public oncology hospital, and the other two are private doctors. So, I am able to cross their suggestions and diagnosis and to be able to distinguish the correct one, in case they differ ... In the past I had four doctors, but I stopped visiting the fourth one, who was a private one, because he suggested me to have a surgery in order to remove some calcifications I had. I stopped trusting him and consequently visiting him, because the rest of them didn't suggest that I have surgery at that period. On the contrary, they just told me to monitor my breast condition. I even went to other countries in order to get a further opinion. So, I stopped visiting him. I believe that we should just make a right assessment of doctors' suggestions. I don't believe that we should fully trusted doctors in general ....*

On the other hand, there were a couple of women who already had a trusted doctor and could not cope with the idea of searching and changing doctors continuously in order to be certain about their diagnosis and their course of treatment and action. The following regular participant in mammography screening, who started after having a breast problem, reported:

*30: I am not that kind of person who is being easily terrified about my diagnosis, and I don't get influenced by some of my friends who are visiting more doctors in order to be sure about their health condition. I get irritated from that kind of thinking, because I believe in doctors and do what they suggest me to do. I don't create a variety of different scenarios in my head, such as whether doctors have financial interests from their patients - women they examine. I am just trying to find doctors who I can trust, and after that I don't change them. I mean that I might go to a second doctor on some occasions for a second opinion, but not to more than two, because I get confused afterwards. I am not that kind of woman who has three or four doctors in order to be sure about doctors' diagnosis and suggestions.*

To summarise, a large number of women in this study were very confused and stressed due to their difficulty to identify a trusted doctor due to their concern about issues relating to correct diagnosis. Some of the women reported their distrust in doctors as one of the reasons for their abstinence from breast screening. However, women who had already decided to adhere to breast screening were not overly influenced by such a lack of communication, as they had made their decision regardless of doctors' recommendations.

Interestingly, it has also been observed that the majority of women who already had developed a breast problem resorted to using more than one doctor, mainly, as described above, due to their distrust of doctors.

### **5.5.3 Conclusion**

Women's access to mammography screening in the public sector was characterised by a variety of obstacles. These were created mainly due to the limited number of oncology hospitals and breast screening clinics, combined with long bureaucratic procedures. Such obstacles led a substantial number of women to resort to the private sector.

Women's relationship with doctors did not appear to be ideal. Lack of doctors' communication skills was identified by a substantial number of participants. Distrust in doctors was expressed by several breast screening abstainers and women who already had a breast problem. This either discouraged them from breast screening, or made them consult more than one doctor.



## 5.6 Feelings and Psychological Reactions to Cancer and Breast Screening

In this section, emotional responses to cancer and screening are explored, focusing on breast cancer and its early detection. Most of the responses were consequences of the influences presented in the previous sections. Firstly, the positive and negative consequences of fear of cancer and its impact on breast screening are explored. Then, anxiety about mammography itself is presented, as a further emotional response to mammography screening.

### 5.6.1 Fear of Cancer and its Consequences

Fear was the main emotional response to cancer and early detection examinations identified by the majority of the interviewees. However, the experience of fear appeared to drive different behaviours. For example, the interviewee below expressed on-going fear despite the information she had received through her job on breast cancer and its early detection.

*12: In general, my attitude towards doctors is a very negative one, mainly due to the fear I feel. It is not that I don't know much about this disease [breast cancer] and also about mammography screening etc, but I am afraid of all these.*

Many abstainers or non-regular participants were even afraid to pronounce the word 'cancer'. They suggested that by avoiding it and not talking about it, they would also avoid the development of cancer itself. Thus, they referred to cancer as the 'unnamed disease'. The next extract, reported by a non-regular participant, illustrates the above point.

*31: First of all, many people call it [cancer] a "curse" for example. I happened to say to some women that a friend of mine has been diagnosed with breast cancer, and when they heard me saying this word [cancer], they told me not to say it again. My aunt was telling me that I should not say this word because it is very bad and if I say it, it [cancer] will happen to me too. They even avoid referring to it [cancer], and when they do, they call it "the evil". The majority of people perceive it [cancer] as the consummation of the world; as something extremely bad.*

However, for other interviewees, fear of cancer had the opposite effect in relation to their breast screening behaviour. Despite their fear of breast cancer, they participated in breast screening from a relatively young age, turning their fear into action. These women felt that it was much more preferable to detect breast cancer at an early stage. In other words, the majority of them perceived fear of the disease as a motivation to pass from thinking to doing and thereby fight against possible late stage breast cancer detection. The following two extracts support this issue:

*33: And to be honest with you, I am not afraid of cancer anymore. Nowadays, I don't think that we hesitate to call it with its name, "cancer", which means that we fight against it; we fight against our fear.*

*18: Here in Athens I believe it is impermissible to talk about fear of cancer as a reason for not participating in breast screening, because it is better to diagnose it [cancer] early, rather than at a later stage wherein you will have to have heavy treatments.*

Similarly, women who started mammography screening due to a breast problem had fought against their fear of possible breast cancer development by adhering to mammography screening. However, before they developed a breast problem they had underestimated their risk of breast cancer. Their fear and worry of what that breast problem could be and its future development motivated them to seek, and thereby adhere to mammography screening. The following woman, who had adhered to regular mammography screening due to a breast problem she had at a young age, reported:

*30: As it concerns me, Katerina, contradictory to other women, I feel much more secure when I go for a mammography screening and I get the final diagnosis from the doctor. But also before I go for a mammography screening test, I feel that I really want to get one, so that I will feel relieved of the fear and worry of what I might have [possible cancer or not].*

Most of the participants felt relieved after a mammography screening test in which breast cancer had not been detected. The following regular participant emphasized her feeling of relief after her negative mammography screening test.

*24: I have been going to the gynaecologist since I was very young, and I have gone to the “x” Public Oncology Hospital since I was 33 years old ... Only the final diagnosis of the screening relieves me, nothing else.*

In summary, it was found that fear of cancer has positive and negative effects on women’s breast screening behaviour. It led some women to participate in regular breast screening, in order to minimize the possibility of late stage breast cancer detection and feel relieved. However, for those who refused to participate in breast screening and who abstained unless they had a breast problem, fear of cancer had the opposite effect. In the next subsections, more details are given on the consequences of the fear of the disease for abstainers and non-regular participants of screening.

#### **5.6.1.1 “Cancer will never happen to me”**

One of the consequences fear of cancer had on women who were not having regular mammograms was their ignorance of breast cancer risk factors. They also avoided getting information on the disease and its early detection. This issue is explored further here, accompanied by regular participants’ perspectives.

The majority of women who abstained from breast screening rejected any possibility of developing breast cancer in the future. Most of them supported that they were less likely or no more likely than other women to be affected. The following interviewee, who resisted participation in breast screening, supports this point. She also emphasized the difference between her emotional perceptions of cancer and those of another member of the same association she belonged to.

*12: I feel that this issue [breast cancer and its early detection] does not concern me, but someone else. Do you understand what I mean? For example another member [of the association] talks to me about breast cancer, for which she has been treated for, and every time this happens I feel uncomfortable, because of the theme of the conversation. She talks about her experience [with breast cancer] like something*

*common. But I am afraid of it. She has experienced and been treated for that disease and she feels different than I do. She speaks about her experience with that disease as easily as telling to someone that she went for a coffee today.*

It appeared that most women who abstained from breast screening not only rejected breast cancer as a disease that would ever concern them, but they also rejected and avoided any information associated with breast cancer and its early detection. The following extract supports such an issue.

*1: To be honest, I have no idea about breast cancer incidences in Greece nowadays and I don't want to know. This is because, I thought in the past that prevention and early detection [of cancer] et cetera concern somebody else, but not me. Such issues concern women "next door". It will never happen to us. Generally, all people want and prefer to close their eyes, saying that it will never happen to them.*

Abstainers also appeared to postpone their participation in mammography screening. The following abstainer notes:

*12: I usually postpone such examinations, telling myself that I will do them [examinations] next year. Even if I have some kind of breast pain I usually wait for a short period, to see if it [the pain] will stop. I have a positive perception of what is going to happen to me, and I believe that nothing bad will ever happen to me, but to someone else, especially if it has to do with this disease ....*

Some of the regular participants in mammography screening tried to explain abstinence from breast screening. They suggested that it could possibly be due to fear of breast cancer disease and inability to deal with such a possible future threat. The instinct to protect oneself from negative and distressing thoughts had led to abstinence from breast screening. Such an emotional response also characterises regular participants; however, the latter react differently by using their fear as a motivation rather than as a barrier. The quote that follows, reported by a regular participant, supports the above issue.

*29: Refusal of cancer development in ourselves is a human instinct and reaction to protect our psychology really. So, many people, who don't participate in regular mammography screening, excuse themselves by supporting that such an unpleasant and stressful procedure creates them great psychological pressure and anxiety that may lead them to depression. So they want to believe that such a disease [cancer] will be never developed to them. I believe that even women who adhere to regular breast screening also deep inside them do not believe that there is a risk of breast cancer appearance to them, but contrary to the rest of women they have the need to check it out first so they will be sure and feel relieved.*

However, from the abstainers' perspective, their abstinence from mammography screening was also due to their fear of further diagnostic examinations their doctor may advise them to have, in the case of a suspicious lump being detected. Thus, many abstainers expressed that they would prefer to wait until the first symptoms or breast problems appeared. The following abstainer notes:

*22: I never had a pain in my breast or something similar to a symptom to go for such examinations. Thanks to God, I am fine and healthy so far. And apart from that, you'll never know what could possibly be diagnosed after mammography screening and the further examinations you would probably have to undergo.*

To summarize, it appeared that some interviewees rejected breast cancer as a possibility for them personally due to their fear of cancer. The perception that "cancer will never happen to me" appeared to form one of the inhibitors to their participation in breast screening.

#### **5.6.1.2 Cancer taboos and stigma**

Fear of cancer created a variety of prejudices and taboos towards breast cancer and screening. These constituted the way some of the interviewees perceived cancer and people with cancer. Such taboos and the possible stigma women with cancer can feel from their social networks are explored in this section.

Prejudices associated with cancer and its early detection were identified by some abstainers or non-regular participants. This raised the level of their fear of cancer and

discouraged them from understanding the severity of the disease. The following extract, reported by a non-regular participant, who started participation due to breast pain, is an example of some of these prejudices.

*28: When the breast cancer campaigns were selling these blouses with a circle sign on them, to financially support cancer campaigns and the fight against breast cancer, I was afraid to wear it ... and I still don't want to wear it. If I had worn that blouse I would also probably have developed breast cancer, because I would have something bad on me; a "bad" mark, something relevant with that disease [cancer]. This behaviour of mine is because I do not want it [cancer] to develop in me, and I also do not want to say it, to call it with its name, because I am afraid it will also develop in me. And I believe this is normal. I don't want to talk about it, not even to realize its existence. It [cancer] is like something awful that nobody wants to pass by, don't even want to look at it.*

It appeared, also as noted by the previous interviewee, that fear of cancer was related to stigma. The following non-regular participant, having a family history of breast cancer reported her personal experience in relation to stigma. She described the fear of possible stigma cancer patients and their families had.

*26: People and relatives get annoyed when they listen about such diseases [such as cancer]. That is to say that cancer comprises a taboo issue even nowadays. On many occasions, people think that everything is fine if their surroundings and generally their social networks do not know that there is a person with cancer in their family. These people think like this because they are afraid that the person with cancer, as also their whole family will be stigmatized from their surroundings.*

The fear of people that they may "catch" cancer, as in the case of a contagious disease, was cited by the same interviewee. She also noted the isolation of people with cancer from their social networks.

*26: They think they will develop cancer too. I do not know why, but some people think that by having company with cancer patients or by speaking about cancer, they will develop it [cancer] too.*

Similarly, the following interviewee, who was a regular participant in mammography screening, supported the stigma and isolation people with cancer may experience.

*25: I think there is an issue of stigmatisation towards women with cancer from the people that surrounds them. Maybe those women's social networks, find other ways to name such diseases [cancer], during their effort to cast out the evil [cancer]. So they call that disease [cancer] as "the evil disease" or "the evil" etc. ... However, I believe that when the cancer patients are isolated from the rest of the world and become undemonstrative, they stigmatise themselves. I think the cancer patients are those who build up the particular image for themselves, and they prompt the rest of the people to stigmatise them.*

As reported by the previous interviewee, it is also the patients' behaviour that contributes to the stigmatization created by their social networks. In other words, in some cases, women with breast cancer are trying to hide their disease from their social networks. They do so in order to avoid stigmatisation and isolation, but, in some cases, they can result in isolating themselves.

*23: There exists an issue of stigmatisation to people with cancer. I cannot understand this but I cannot understand either the cancer patients' behaviour on this issue. I see many people with cancer that are trying to hide their disease and they do not want to talk about it at all. They keep it as a secret for themselves. They hide and shroud it.*

Cancer taboos and stigma were not absent from people with a high educational level. The majority of the interviewees emphasized this issue. It was stated that a higher educational level does not necessarily determine a positive perception of breast screening. In other words, highly educated women do not necessarily think and behave in a progressive and open-minded way. On the contrary, many of them had cancer taboos. The following extract, reported by a regular participant in breast screening, supports this point:

*14: In general, and from what I have heard from people around me, who are highly educated, they do not call cancer by its name. Even people who have cancer say that they have "the evil disease" and they use other similar names, and these people are*

*women with a high educational level ... If women with a high educational level react like this way towards cancer, I think that these with a low educational level are even more likely to be at risk.*

To conclude, cancer taboos and prejudices, not only led to abstinence from regular breast screening, but on some occasions were responsible for the stigmatisation of people with cancer. For women having such taboos, fear of cancer was increased, discouraging them from receiving information about the disease and becoming familiar with breast screening. Taboos also influenced women with cancer, since some of them preferred to hide their disease and become isolated to avoid stigmatization from their social network. Interestingly, a higher educational level did not appear to prevent cancer taboos.

### **5.6.2 Anxiety about Mammography Screening Test**

Anxiety before going for a mammography screening test and while waiting for its results was one of the most common uncomfortable feelings women usually experienced. Details of such an emotional responses to breast screening are presented in this section.

Similar to fear of breast cancer, anxiety about mammograms was expressed by regular participants and abstainers. The next extract, stated by a regular participant, refers to the anxiety before having the test. She also refers to an increase in anxiety after recently being detected with breast cysts.

*25: Since some cysts had been detected in my breast, my anxiety before going for a mammography screening test and ultrasound is much higher than in the past when I had no breast problem.*

Interestingly, it appeared that despite the level of the anxiety regular participants had, it did not prevent them from participating in mammography screening. On the contrary, it made them undergo mammograms without any delay, in order to get relief from the anxiety of possible breast cancer detection. This was also because early detection was of high priority to them. The next two extracts illustrate this issue.



*20: I am a bit anxious every time, until I get the final results from the mammography screening test. I feel anxious and I am a bit afraid at the same time [in case of possible breast cancer detection] but these are at normal levels, I don't panic.*

*17: Since we are human beings, we are afraid a bit and we also feel anxious and stressed when we participate in such screening tests, because we don't know the results yet, so we are not completely relaxed. Nevertheless, we don't panic about any possible result, and we are not scared of everything that could affect our health. So we are not also afraid to participate in early detecting tests. Personally, I am thinking that if this year the mammography screening test detects something [malignant], I will feel very lucky that such detection will be quite new, since at my last year's mammography screening test nothing "bad" had been detected.*

Women who started participation in mammography screening due to breast pain or problems also reported their anxiety about this test. However, anxiety appeared to have a different effect on their screening behaviour before and after developing breast pain or symptoms. It appeared that such an anxious feeling comprised an extra obstacle for them in their participation in regular mammography screening, unless they had breast pain or symptoms. The following extract refers to this point.

*32: I was very anxious while I was waiting for the results and doctors' final diagnosis from the mammography screening test I had ... That was my first and only time I had a mammography screening test, since I had a breast pain. I am hesitating to start participating in regular mammography screening from now on, since it is an anxious procedure and I don't have any breast problem anymore and mammography screening is a stressful procedure.*

Similarly, the next interviewee expressed her anxiety and uncomfortable feeling about mammography screening as a reason for her past abstinence. She abstained from regular mammography screening until she developed a breast problem.

*24: I started having mammograms on a regular basis in my 40s due to some lumps I had detected by chance, by myself. Before that, I never did such cancer early detecting*

*tests, not even Papanikolaou Test [smear test]. I have the perception that such screening tests are quite stressful and uncomfortable if there is not a problem/symptom, and the whole screening procedure is completely unpleasant.*

To summarize, anxiety about mammography screening was expressed by the majority of the interviewees, regardless of their breast screening behaviour. Interestingly, for regular participants, their anxiety led them to adhere to regular mammography screening in order to feel relieved. On the contrary, anxiety was an extra reason for abstainers' screening behaviour, unless they had breast pain or symptoms.

### **5.6.3 Conclusion**

In this section, the emotional responses to cancer and screening were explored. These were mainly fear of cancer and anxiety about mammography screening. The experience of fear, similar to that of anxiety, appeared to have positive and negative effects in relation to women's breast screening behaviour. Fear was caused by a complex set of factors, already presented in the previous sections. These included lack of education and familiarization with cancer and screening from the interviewees' immediate and broader social networks. Interestingly, personal and breast cancer experiences, arising from women's immediate network, comprised the most important influential factors to breast screening. These could be positive and negative. Thus, depending on the influential factors, fear comprised either the motivation or the barrier towards participation in breast screening.

Fear of cancer had other negative consequences. Cancer taboos and the possible stigmatisation of women with cancer were some of these. These were expressed by abstainers or participants to mammography screening due to breast pain or breast problems. Rejection of the possibility of future breast cancer development (ie. 'It won't happen to me') was another negative consequence of fear. On the contrary, seeking relief after a negative screening test was a positive consequence of fear and thereby appeared to lead to participation in regular breast screening.

## 5.7 Conclusion

In this chapter, a variety of factors and experiences were identified as influential in this group of women's breast screening behaviour. These included influences from their immediate and broader social network. Interestingly, influences that arose from their immediate network, such as family and close friends, appeared to be of essential importance in relation to their screening behaviour. The kind of relationship and communication they had with their family and close friends correspondingly influenced their familiarization with breast screening and thus their behaviour. Breast cancer experiences arising from the interviewees' immediate network were also a strong influence in relation to their screening behaviour and perception of cancer and screening.

The broader network was comprised of the mass media, women's associations and working environment, breast cancer campaigns and personal doctors/gynaecologists. These also influenced women's breast screening behaviour, but not at the level immediate network appeared to. Nevertheless, a trusting and communicative relationship with personal doctors/gynaecologists had a strong influence on their participation in breast screening. Interestingly, the level of the influences arising from women's broader network depended to a large extent on the sensitization and familiarity they already had from their immediate social network.

Experiences that arose from the engagement with the mammography screening processes were mostly characterized by having to overcome a variety of obstacles. The long bureaucratic procedures in the public sector had led to a preference for the private. Experiences of interaction with doctors throughout screening engagement were not ideal either. Lack of doctors' communicative skills, as well as distrust in their diagnosis and subsequent proposed course of action created confusion and anxiety in the majority of women in this study. Thus, there is a need for improvement of the breast screening process, and further focus on the relationship between women and doctors.

The above set of factors appeared to impact on women's beliefs, perceptions and emotional responses in relation to breast cancer and screening. Fear of cancer was one

of the emotional responses, having a positive or negative effect on their screening behaviour. On some occasions, fear resulted in the motivation to participate in regular breast screening, while for others it was a barrier. The latter also led to cancer taboos and the possible stigmatization of people with cancer. Rejection of the possibility of developing breast cancer in the future was a further negative consequence produced by fear of cancer. Interestingly, the above negative consequences of fear had been identified by abstainers, non-regular participants or even regular participants due to a breast problem. On the contrary, aiming to feel relieved following a negative mammography screening test was a feeling expressed by regular participants. Similar to fear, anxiety was an emotional response identified by the majority of the interviewees, which also had positive and negative effects.

The complexity of the findings and the interaction among the various factors that form Greek women's mammography screening behaviour is an interesting element within this study. The strong association between women's influences from their immediate social network and their beliefs and perceptions of breast cancer and screening was one of them. These led to corresponding breast screening behaviours. Accordingly, emotional responses to cancer and screening were developed depending on women's influences and experiences. The above associations identified in this study are further analyzed and explained in the following chapter, in the light of existing theories-models and literature.

## **CHAPTER 6 – Discussion & Conclusions**

## 6.1 Introduction

From the presentation of the findings in Chapter Five it is clear that there are two particularly important themes that have been revealed through this research. The first is the importance of the influences women received from their interaction with their environment – from social networks, and particularly from their immediate network. The second is the opposing effect of fear on women's mammography screening behaviour. These two themes are discussed in this chapter and are considered within the context of existing explanatory behavioural theories. Elements of three behavioural theories (SCT, TPB and TTM) are used in order to facilitate the understanding of the data and to justify any claims about the data and its explanation. A range of previous research studies are also used to support and explain the aforementioned inferences and themes. Therefore, a synthesis of the findings, the existing behavioural models and the literature review is made in this chapter, which leads to a diagrammatic representation of the findings and their interpretation in a tentative model showing the relationships between women's past and present relationships and experiences and environments.

First, the strong association between women's interaction with their environment/social networks and their breast screening behaviour is presented and explained. Interestingly, the interaction women had with their family, close friends and school appeared to have more influence on their screening behaviour, compared to the influence arising from their interaction with their broader networks. Thus, the nature of interaction that occurs early on in women's lives is very influential, possibly more than was anticipated.

Such influences impacted on women's beliefs, perceptions, emotions and thus behaviour in relation to breast cancer and screening in both positive and negative ways, depending on the quality of such interactions. These influences and interactions comprise the inner part of the aforementioned model. Surprisingly, there appeared to be moderate influence from the mass media, cancer campaigns, associations and doctors, which all belonged to women's broader network. Such moderate influences comprised the outer part of the model.

An attempt to explain the opposing effect of fear is made in the second section of this chapter. There appears to be a link between women's interactions with their immediate network, their emotional responses (fear), perceived risk and mammography screening behaviour. Fear of cancer was identified as the main consequence of women's breast cancer experiences, which arose from their immediate network. Such experiences influenced women's perception of risk of developing breast cancer in the future and thereby their fear of cancer. Fear was found to be a motivation but also a barrier towards mammography screening participation. Thus, it was identified that the way people emotionally respond to cancer in some cases determined screening behaviour.

The tentative model, which was built from the interpretation of this study's findings in the light of existing behavioural theories- models (Sections 1 and 2) is presented and explained in detail in the Section 3. All of the factors identified in this study and the interactions between them that affect women's beliefs, perceptions, emotional responses (fear) and thereby breast screening behaviour, are represented in a diagram (Figure 12). This is accompanied by an associated commentary about how such a tentative model might be further tested in subsequent research, serving a useful purpose for those thinking about intervention studies.

Finally, the broader contributions of this study and those related to the Greek context are presented, followed by consideration of the limitations and the concluding points of this research study.

## **6.2 The Effect of Social Networks**

One of the main issues identified in this study was the importance of women's interaction with their social networks in relation to their mammography screening behaviour. Interpersonal relationships appeared to strongly influence mammography screening behaviour. Women's beliefs and understanding in relation to mammography screening were formed not merely from the individual's own observation and knowledge, but through human interactions (Pasick et al., 2009). In other words, the meanings of beliefs were not located within the individual, but in between the self and the other (Bandlamudi, 1994). Similar to Pasick et al. (2009), in this study meanings were constructed through a dynamic social intercourse, rather than through a static, objectified, measurable construct. Such a dynamic intercourse was identified as part of the process Greek women went through in order to build their current beliefs and perceptions related to breast cancer and its early detection. The relationship between social networks and breast screening behaviour has previously been investigated by a variety of researchers. Most of them have identified evidence that supports the existence of such relationships (Tejeda et al., 2009; Paskett et al., 2006; Ogedegbe et al., 2005; Messina et al., 2004; Suarez et al., 2000; Suarez et al., 1994), while others have not (Champion, 1994). Nevertheless, the findings of this study add new knowledge to the current body of knowledge, not only by revealing the fundamental influence of interactions between women and their social networks (particularly their immediate networks), but also by exploiting a different dimension on the way such interactions build women's internal world, and thereby their behaviour. Thus, the main outcome was that the quality of such interactions create a different level of influence, which thereby has an opposing effect on breast screening behaviour.

The aforementioned concept is consistent with the Social Cognitive theory (SCT), which treats behaviour as a dynamic interplay between the person, the behaviour, and the environment (Allen et al., 2008). Based on the SCT, these three elements are described as continually interacting, according to the principle of reciprocal determinism (Allen et al., 2008). This explains Greek women's behaviour, which depended to a great extent on the influence they had from their interaction with their environment (social networks). The SCT focuses on the interactions among social network members, role modelling, observational learning, and positive reinforcement



for behaviour change (Perry et al., 1990; Bandura, 1986). These experiences, in turn, influence expectations regarding the outcome of health behaviours, as well as self-efficacy regarding the behaviour (Allen et al., 2008). Among the influences arising from social networks, the findings presented in this thesis revealed that women's interaction with their immediate network was what primarily influenced their participation in mammography screening. The kind of information, education and influence women received, particularly from their family and close friends in Greece, was of essential importance for the formation of their breast screening behaviour. This meant that depending on the quality and kind of influence women received from such immediate factors, they created positive or negative perceptions and beliefs in relation to cancer and screening. These influenced their intention to be screened.

There are a variety of studies which support elements of these findings (Tejeda et al., 2009; Hurdle, 2001; Suarez et al., 2000; Allen et al., 1998; Miller and Stiver, 1997; Surrey, 1991; Gilligan, 1982). Previous research such as Tejeda et al.'s (2009) indicated that social networks are relationships or links between people that may function to provide support and encouragement in mammography screening participation. They reported four dimensions of social support through social networks, some of which reflect this study's findings; informational, instrumental, appraisal and emotional (Suarez et al., 1994). With regard to informational social support, women may be more informed by their social networks about cancer screening and be more skillful in obtaining screening examinations (House and Kahn, 1985). Such an issue was identified in this study, where information and education relating to cancer and breast screening was provided to Greek women through their social networks. With regard to appraisal support, social networks could also provide more occasions for observational learning through role modeling and reinforcement (House and Kahn, 1985). In the case of the findings presented in this thesis, the role female family members had on Greek women's breast screening behaviour was of great importance. Finally, emotional support from close friends has been previously shown to help women overcome personal fears or difficulties in obtaining screening examinations (House and Kahn, 1985). Such emotional support was indeed supported by this study's findings, where it was identified that women's close friends and their breast cancer experiences had a strong influence on behaviour. Nevertheless, contrary to the above studies, the findings presented in this thesis support that influences

arising from the immediate network could also have a negative influence in relation to participation in mammography screening. This was due to the different quality of interactions between women and their immediate social networks identified in this study.

Contrary to the essential influence of the immediate network, Greek women's interaction with their broader network appeared to be of low influence towards their mammography screening behaviour. These two different networks and their influence are discussed in the following sections, in an attempt to explain and understand the way they affected mammography screening behaviour. These network influences are discussed in more detail below.

### **6.2.1 Immediate Network and Significant Others**

The study reported in this thesis indicated that women's social networks and in particular their family and female friends (immediate network) have a strong influence on their participation in cancer early detecting tests, including mammography screening. This has been confirmed and explained by a variety of researchers. Many studies show that for girls and women at every developmental stage, the need for connection and relationships with others is a primary motivation that determines cognition, affect and behaviour (Miller and Stiver, 1997; Surrey, 1991; Gilligan, 1982). It is possible that the influence women receive throughout their social relationships may assume a more primary role for them, and affect their decisions and feelings on health issues, such as breast screening (Hurdle, 2001). Thus, although other researchers confirmed and explained such a strong influence identified in women's breast screening behaviour, this is the first time such an issue has been revealed within the Greek context.

Strong family ties, as well as parents' willingness to talk about cancer and screening and to provide encouragement for breast screening, appeared crucial in relation to influencing Greek women's participation in mammography screening. These findings are similar to Suarez et al.'s (2000), who emphasized the influence of strong family ties on family members' screening behaviours. Similar to the Greek culture, Spanish families tend to help and support family members, placing a higher value on continued

involvement in an extended family network (Suarez et al., 2000). Greek women were strongly affected by their family in making the decision whether to participate in mammography screening or not. Those who were regular participants later on in their lives had a comprehensive education on breast cancer and its early detection from a young age. Allen et al. (1998) pointed out that encouragement by social network members, such as family members, to have a mammogram was positively associated with the intention to have a future mammogram among women who had not yet established a regular pattern of screening. The above studies support the findings that were identified in the Greek context. This thesis thereby emphasizes the positive role family can have towards participation in mammography screening, adding a new element to the Greek knowledge.

That Greek women's intention and therefore behaviour was influenced by their family and friends can be supported and understood by the Theory of Planned Behaviour (TPB). Greek women's immediate social network reflects on the 'significant others' element of the TPB. This is due to the high influence they have on the formation of women's perceptions, beliefs, and thereby behaviour in relation to mammography screening. Based on the TPB, beliefs lead to the formation of a behavioural intention or motivation to engage in a particular behaviour (Pasick et al., 2009). Individual intentions represent a person's motivation (Conner, 2002). In other words, according to the TPB, a woman will more likely express the intention to be screened if she holds favourable views about an action (such as mammography), perceives that her significant others view mammography positively, and perceives herself to have control over obtaining a mammogram (Pasick et al., 2009). Thereby, significant others, who represent Greek women's immediate network, were mainly responsible for the creation of their perceptions, beliefs and intention in relation to participation in mammography screening. This therefore helps to explain the strong influence of this immediate network.

In addition, based on the TPB, the primary influences regarding intention are said to be normative beliefs, control beliefs and behavioural beliefs (Pasick and Burke, 2008). Interestingly, most of the Greek participants who reported that their family members (particularly mothers, sisters and daughters) and close friends believed and participated in regular mammography screening adopted the same beliefs and

screening behaviour. In other words, on most occasions, the people who comprised women's immediate social network were taken as paradigms for breast screening behaviour. Thus, normative beliefs were created from Greek women's interaction with their family and close friends and were identified as essential for the formation of mammography screening behaviour.

Elements of the TPB have also been used by other researchers in order to explain findings based on health behavioural theories. Nevertheless, in some of them the identification of significant others differed from those of this study. Similar to Pasick et al. (2009), this study identified that subjective norms were strongly associated with normative beliefs. Such beliefs were formed according to the influences women had from their immediate and broader social network. However, in the study of Pasick et al. (2009), women's adult daughters were identified as significant others, belonging to their immediate network. Washington et al. (2009) further supported that adult daughters should be added to the TPB construct of subjective norms, since they were considered as important influences (significant others) on behaviour. On the contrary, in this study there was no such limitation to adult daughters, since Greek mothers were positively influenced by both their adult and adolescent daughters, who were informed about breast screening from their school. Such contradictory findings may be due to the way Washington et al. (2009) recruited their sample. In particular, in the study of Washington et al. (2009) nine Mexican and Filipina immigrant and US-born mothers and their adult daughters was recruited, while in this study there was not such a limitation with regard to the sample. Similarly, in another study in Greece, some women said they had decided to undergo mammography themselves after discussion with their daughter or friend (Trigoni et al., 2008). Tejeda et al. (2009) further underlined the significant impact daughters can have.

Partners and husbands also encouraged some of the Greek women in this study to participate in regular mammography screening. These findings agree with other studies, which found that partners or husbands were substantially influential in women's behaviour change, by helping them adopt particular health behaviours (Coppotelli and Orleans, 1985). Langerlund, et al. (2000) further found that abstinence from mammography screening was more common among single, divorced women or separated women, suggesting they lacked appropriate social support. They explained

that non-single women are more concerned about their own health and have a greater feeling of responsibility for their partner and children. This could be a further explanation of the fact that husbands' encouragement to some women in this study was an important influence in relation to their participation in mammography screening.

Parallel to the influence of the family members, the findings of this study suggest that close friends also had an important effect on females' breast screening behaviour, acting as significant others. Similar to this study, other researchers (Husaini et al., 2001; Zimmerman and Connor, 1989) found that friends also played an important role in the formation of their outlook in relation to breast screening. Greek women who perceived regular mammography screening to be a common practice among their peers were more likely to be screened. This is because friends acted as significant others, having an impact on the creation of females' beliefs, perceptions and emotions, and thereby on their behaviour. This was also supported by Surbone et al. (2004) and Dacey et al. (1999). Emotional support from close friends helped Greek women overcome personal fears or difficulties in having screening examinations (Suarez et al., 1994). It was interesting to note that the Greek women in this study preferred to be accompanied by a friend when going for a mammogram.

In summary, part of the findings of this study are supported by previous research on the important influence the immediate social network can have on women's beliefs and perceptions in relation to breast screening. In addition, elements of the TPB were used to explain and understand the association between significant others (immediate network) and women's behaviour, making the findings meaningful and more robust. Interestingly, this study differed compared to previous research regarding the effect of social networks towards mammography screening behaviour. In particular, it appeared that mammography screening behaviour depended on the quality of interactions between women and their social networks. Consequently, the same influential factor appeared to have an opposing effect to mammography screening behaviour. Such an opposing effect is presented and explained below.

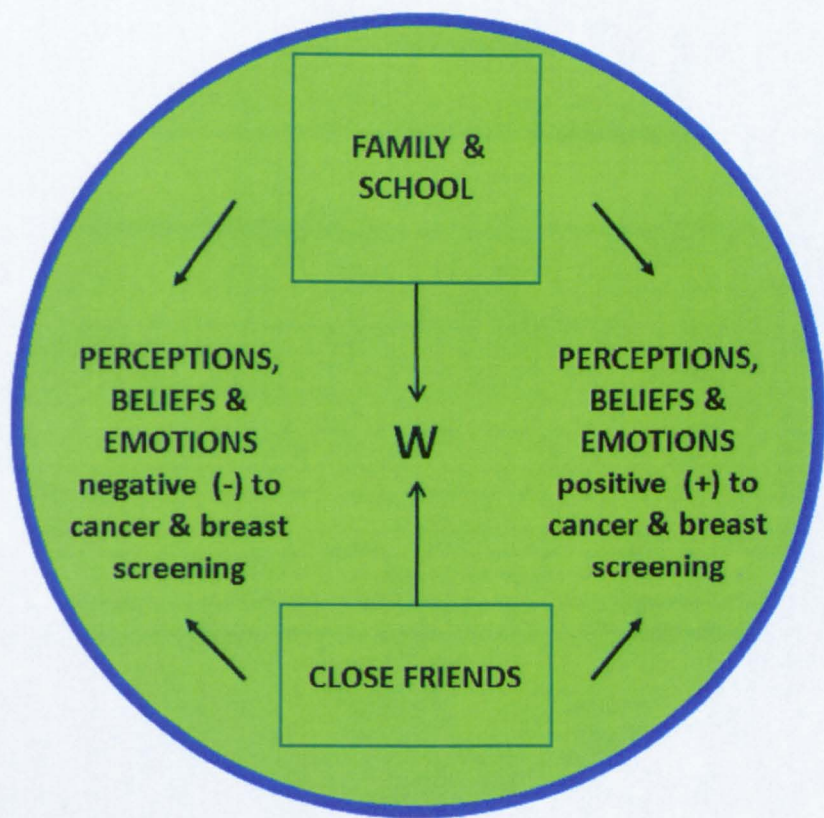
### **6.2.1.1 The opposing effect of significant others**

Despite the positive influence the factors arising from the immediate network had on breast screening behaviour, it was found that the same factors might also have a negative influence, and lead some women to abstain from mammography screening. Not all females in this study had the same type of relationship (or of the same intensity) with their mother and/or daughter for example. Women who had a free and communicative relationship with their family members regarding breast cancer and screening perceived their family as a positive influence towards their participation in breast screening. On the other hand, women who had no effective or fulfilling communication with their family members did not receive any positive messages about breast screening. These factors contributed to the formation of particular beliefs and perceptions that were relevant to females' behaviour as regards screening. The latter either abstained from mammography screening or were not regular participants, because they were not engaged in conversations on breast cancer and screening with their family members and friends.

Lack of communication and conversations between females and their family members as well as negative family exemplars (such as mothers and sisters who never went for mammography screening) discouraged the Greek women in this study from attending mammography screening. Women who refused to participate in mammograms or participated only due to breast cancer or a related problem not only appeared to receive no education from their family on this issue, but breast cancer and its early detection was frequently a taboo issue for their family members. Thereby, this study's findings further suggest that focus should be given to the quality of these influences by healthcare providers. For example, future interventions relating to women's education and information on breast cancer and screening could be based on an initial assessment of the quality of information and education females already have through their family and close friends.

Thus, this study adds further insights to the TPB. The most important influence on mammography screening behaviour was the quality of the relationship Greeks developed with their social networks, and particularly with their immediate network (family, close friends, school). The findings not only specified significant others (such as daughters, husbands, mothers) who have the same level of influence on women's

behaviour, as supported by the TPB. On the contrary, it was found that the same significant others can have an opposing effect towards screening behaviour, depending on the quality of interactions women had with them. Depending on their quality, such influences created women's beliefs, perceptions and emotions to cancer and breast screening and thereby led to their breast screening behaviour. Nevertheless, significant others such as family, close friends and school were the first source of influence women received in their lives and this is also why they were identified as having a high influence towards the creation of perceptions, beliefs and thus intention to be screened. Such essential influences women had throughout their interaction with their immediate network and their opposing effect are presented in Figure 9, where women (W) are placed in the centre of the circle.



**Figure 9:** Influences arising from women's immediate network

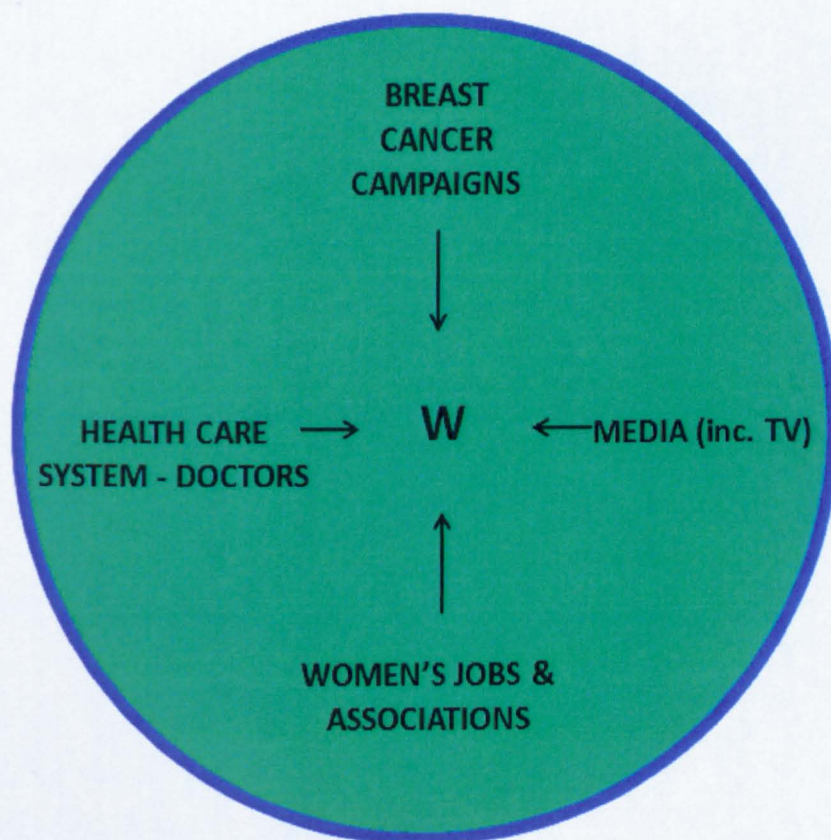
The opposing effect of significant others identified in this study has been reported in other studies too. Tejeda et al. (2009) found that women who do not confide in others (family and friends) about their health may have fewer opportunities to learn about breast cancer, be less skilful at obtaining screening (Suarez et al, 1994), and find

fewer opportunities to discuss their experiences about mammography screening (Tejeda et al., 2009). Additionally, Tejeda et al. (2009) identified that women who admitted that they were not regular participants in mammography screening were more likely to say that they only spoke with their doctor about the subject, and further stated that they did not speak to friends or relatives about their health. In agreement with part of the findings identified here, they added that they did not like the idea of sharing such information with others, not even family or friends. Thus, it could be suggested that women's behaviour is created by an internal procedure, based on their beliefs and perceptions, as also supported by the TPB. Nevertheless, such beliefs and perceptions were mainly influenced by women's immediate network (significant others).



### 6.2.2 Broader Network

According to the interviews, interaction with doctors, engagement with the Primary Health System (PHS) and mammography screening procedure, mass media, cancer campaigns and women's jobs and associations comprised the influences women had from their broader network. Contrary to the important role women's immediate environment had on their mammography screening behaviour, the influences that arose from their broader network appeared not to be of the same importance. This was because broader social network was not of the same strength and depth as that of the immediate social network. Additionally, the influences that arose from the broader social network followed those that arose from the immediate. This meant that women had already created beliefs, perceptions and emotions in relation to breast cancer and mammography screening before the influences they received from their broader network could take effect. In Figure 10 the influences that arose from women's broader network are presented. Women (W) are placed in the centre of the diagram.



**Figure 10:** Influences arising from women's broader network

Only interaction with doctors appeared to have an influence on some occasions. When doctors had built a trusting and communicative relationship with women, their suggestions on mammography screening participation were of essential importance to women's mammography screening behaviour. Nevertheless, since their influence depended on the quality of relationship they had with women, further emphasizes is given again on the importance of the quality rather than only on the nature of interactions between women and their social networks.

Other studies also support the importance of a trusting relationship between women and their personal doctor towards participation in mammography screening. Such studies report that women are more likely to seek screening for breast cancer if they are advised to undertake screening by a doctor (Achat et al., 2005; O'Malley et al., 2001; Clarke et al., 2000). In the studies of Tolma et al. (2006b) and Allen et al. (2008) doctors were also identified as a strong influence on women's participation in mammography screening. However, it was not clear whether the good relationship and communication with doctors was what made women trust them and thus be influenced by them. On the contrary, in this study it was clear that doctors' recommendations acted as a motivation only if they had built an interpersonal trusting relationship with women. On such occasions personal doctors acted as a trusting, close friend to their women patients. Based on the TPB, such doctors were identified as significant others, due to the strong influence they had on women's perceptions, beliefs and subsequent screening behaviour.

On the other hand, there were many interviewees who, despite reporting lack of meaningful conversation and communication with their doctor, regularly participated in mammography screening tests. Interestingly, most of them stated that they had already decided to participate in breast screening, despite the lack of discourse with their doctor regarding breast cancer. One of the reasons for those participants' behaviour was the already positive beliefs and perceptions they had, which were created by the influences they had through their interaction with their immediate network. For some other Greek women, the fact that they had already developed a breast problem made them resort to mammography screening and doctors, despite their inherent distrust in them.

The latter reported their distrust of doctors, and particularly doctors' proposed courses of treatment and action in relation to an abnormality in their breast, such as cysts or non-malignant tumours. The uncertainty about their doctors' real interests led many of them to resort to more than one doctor, in order to be certain about the accuracy of their diagnosis and subsequent course of treatment or action in general. Similarly, Peek et al. (2008) identified a general fear of the health care system and clinicians among women. Such a fear was partly due to mistrust of the medical system, reflecting concerns about physicians' incompetence and/or medical errors (unintentional harm), or concerns about unethical experimentation (intentional harm). However, contrary to the findings of this study, according to Peek et al. (2008), such distrust contributed to women's fear of participating in breast screening. This could possibly be due to the fact that most of these Greek women had already developed a breast problem, and therefore they had also increased perception of the risk of possibly developing breast cancer in the future. Thus, fear of possible breast cancer development in the future led them to adhere to mammography screening, despite their dissatisfaction with and distrust of doctors.

Interestingly, all participants in mammography screening who reported lack of communication with their doctors emphasized their desire and need to spend more time conversing with them. The need for better communication and relations between women and doctors was reported by most of the women, despite their mammography screening behaviour and the reasons that led them to participate in mammography screening. This suggests that health care providers could focus on advancing their communication skills and knowledge of women's needs in order to succeed in developing a better interpersonal relationship with them. Such developments could help the advancement of informed decision-making in relation to mammography screening. Women's associations, breast cancer campaigns and mass media were even less influential, possibly due to their more impersonal nature.

With regard to mass media, women who had already decided to participate in mammography screening accepted the meanings and information provided by the mass media, while abstainers were repelled by them. The former referred particularly to television, reporting the positive influence other women's stories about breast cancer had on their breast screening perception and behaviour. Such stories and

advertisements of breast cancer campaigns sensitized many women who claimed participation in regular mammography screening. Tonani and Carvalho (2008) found that television was seen as an important means of information dissemination on prevention and early detection. Messages generated by television can be persuasive by using a combination of verbal and non-verbal elements (Tonani and Carvalho, 2008). Similarly, Smith et al. (2009b) concluded that the media were the most important factor in recalling memorable breast cancer messages (37.3%). However, contrary to the above studies, television sensitized those Greek women who already had a positive perception in relation to mammography screening, which was built through the interpersonal interactions with their immediate network.

As mentioned before, abstainers from mammography screening claimed that breast cancer stories carried on television had prevented them from participating in mammography screening. They stated that since they had no previous education in cancer and screening from their immediate social network, they were put-off by breast cancer messages generated by the mass media, particularly television. They even denied watching breast cancer campaign advertisements and listening to breast cancer-related stories. Therefore, the presentation of facts through mass media or other sources without the appropriate conceptual framework may result in confusion rather than education (Silverman et al., 2001). Such a conceptual framework could be constructed by taking into account women's various backgrounds and knowledge on cancer, early detection and screening. In other words, information and facts provided through the mass media could be presented in a straightforward way, adapted to the needs and background of the respective receiver. However, such an individualistic aim is not realistically achievable, since the mass media appeals to a vast number of women with different characteristics, educational levels and backgrounds. Thus, unless women already have an educational background on breast screening, mass media cannot educate and strongly influence them on this issue. Obviously, mass media cannot replace the interpersonal educative role of family, close friends, school and, on some occasions, doctors.

To summarize, most of the participants in this study preferred to be informed about breast cancer and screening through an interpersonal and intimate process, such as by communicating with their family members, close friends and a trusted personal

doctor. Broader networks were of moderate to low influence, with the exception of a trusted doctor in some instances. Thus, this study identified that the kind of interpersonal communication women built with a significant other determines the creation of their beliefs, perceptions and thereby behaviour in relation to mammography screening. The depth and strength of such relationships and the way women perceive them is therefore of essential importance. In addition, participation in mammography screening due to a breast problem was linked to high perception of risk for possibly developing breast cancer and not necessarily on positive influences arising from women's immediate network. Finally, more focus should be given to the quality of women's interactions with their immediate network, doctors and health care providers in general, rather than how to communicate information on breast screening using impersonal means (such as mass media and breast cancer campaigns).

### **6.2.3 Quality Versus Quantity of Social Interactions and the TTM**

As mentioned above, the importance of the quality of social networks towards participation in mammography screening was identified in this qualitative study. The majority of the participants in the study presented here emphasized the quality of encouragement and influence they had from their social networks, rather than referring to their size. The kind of interaction, communication and relationship those women had with their network led to the corresponding mammography screening behaviour. Thus, this study contributes in emphasizing new elements of women's interactions; the quality of such interactions. On the other hand, this contradicts the findings of some previous studies which emphasize the quantity of women's social networks as an important impact on participation in mammography screening.

Many researchers maintained that the number or quantity of women's relationships is an important issue that may influence screening (Suarez et al., 2000; Suarez et al., 1994; Cohen and Syme, 1985), apart from a few who did not find any association (Tejeda et al., 2009; Dacey et al., 1999). The former claimed that women who belong to large social networks are more likely to be informed about cancer screening and have screening examinations. However, unlike this study of Greek women, most of the studies which supported the hypothesis about quantity of social networks as the most important component of screening were conducted using a quantitative

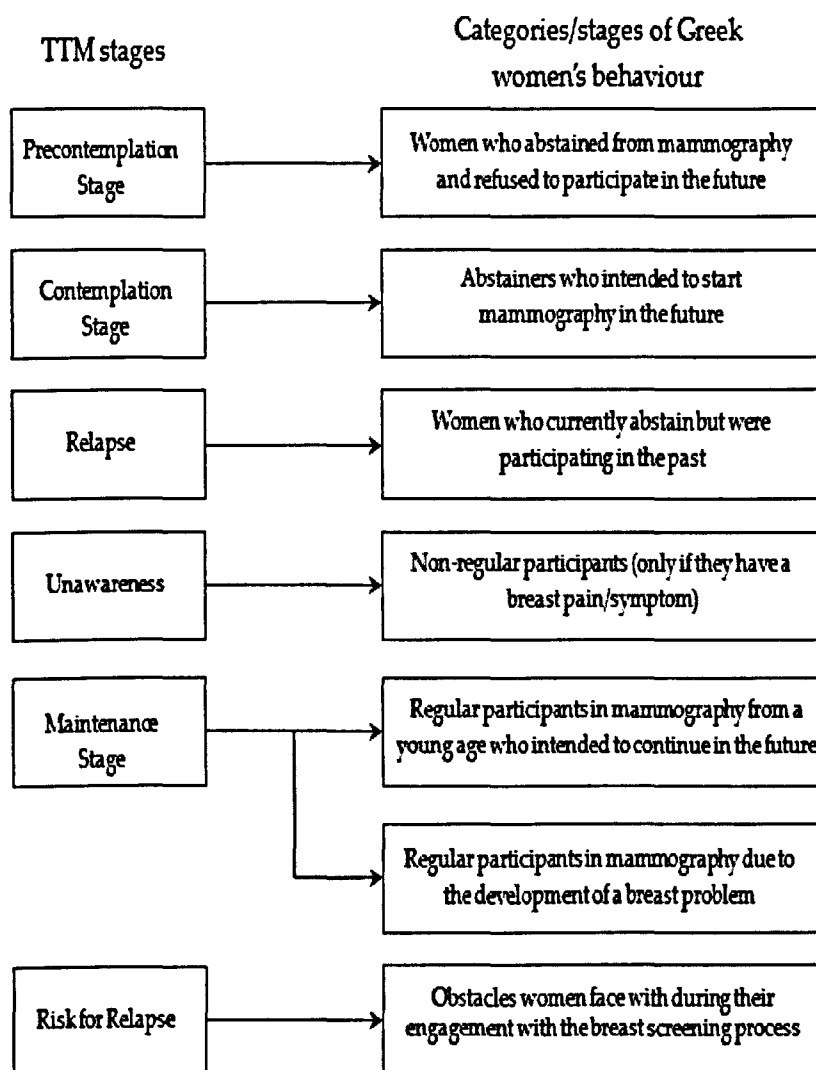
approach. Therefore, the studies mentioned above did not explore the quality of women's interactions with their social networks, as this study did by the use of interviews. This could be the main reason for such a contradiction between these findings and those of previous studies.

The importance of quality instead of the quantity of social networks identified in this study provides a new perspective on the Trans-theoretical Theory of Behaviour change (TTM), which was used to partly guide the formation of this study's questionnaires and interviews. Based on the TTM and its construct of "decisional balance", the decision to adopt a behaviour depends on the actual number (quantity) of positive and negative factors (pros and cons). The findings of this study emphasize the quality of the influential factors, which act as motivators or inhibitors (pros or cons).

The behaviour stages of the TTM were used to further understand the characteristics of the different groups of women identified in this study in relation to their mammography screening behaviour. In this study, there were women who abstained from mammograms and refused participation in the future; abstainers who intended to start participating in the future; women who stopped being regular participants and non-regular/rare participants in mammography screening. These categories reflect the following stages of the TTM respectively: precontemplation stage of the TTM (currently not doing, and not intending to adopt the target health practice), contemplation (currently not doing, but considering adoption of the practice), relapse (already ceased the activity and do not intend to adopt it in the future) and unawareness (unaware that the particular behaviour is unhealthy), as a sub-group of the precontemplation stage). On the other hand, there were regular participants in mammography screening from a young age who intended to continue in the future, and women who adhered to breast screening due to a breast problem they had developed. Both of these two categories reflect the maintenance (sustaining the change over time) stage of the TTM. Thus, the above categories of Greek women's breast screening behaviour mirror most of the behaviour stages the TTM is composed of. The associations between the TTM stages and the Greek women's mammography screening behavioural categories/stages are illustrated in Figure 11. Thus, even though the various behavioural categories of Greek women fit the TTM stages, these were

created according to the quality of influential factors and not according to their quantity. This is where this study adds new insight to the TTM.

In addition, the 'risk for relapse' stage of the TTM also reflects some of the participants' behaviour in this study. Despite the various obstacles women reported throughout their engagement with the mammography screening procedure, these had no negative impact on the current regular participants in mammography screening who already had a breast problem. However, this cannot guarantee their future participation. A substantial number of women referred to the obstacles arising from the public health care system, such as the long bureaucratic procedures causing long queues until a woman gets a mammogram. A further obstacle was women's distrust in doctors, arising from their experiences regarding communication with such professionals. Such obstacles may also result in future abstinence of current participants who have not developed any breast problem. Thereby, such obstacles could possibly lead to women's 'risk for relapse' (a stage of the TTM), whereby women could stop their participation in mammography screening. Such an association with the particular stage of the TTM is also presented in Figure 11.



**Figure 11:** Associations between the Greek women's mammography screening behaviour and the TTM stages



To summarize, influences arising from the interviewees' interactions with their social networks were of essential importance in relation to their mammography screening behaviour. This study provides insight on the direction and level of such influences. Interestingly, the motivation to engage in a regular screening behaviour did not appear to be associated with all of the immediate and broader influences women were subject to on the matter of breast screening. The influence of personal doctors, the mass media, associations and cancer campaigns, ranged from moderate to low. Influences that arose from women's immediate network seemed to be of fundamental importance. Despite the fact that the immediate factors (influences arising from the immediate network) were identified as being of fundamental influence compared to the broader factors (broader network), they could have an opposing impact depending on their quality. Interestingly, it was the quality and not the quantity of the relationships and interactions between women and their social networks that determined the level and direction of their impact. Depending on the quality of the above interactions, women created particular beliefs, perceptions and emotional responses in relation to breast cancer and screening. Such beliefs, perceptions and emotions were responsible for either women's participation in or abstinence from mammography screening.

The fundamental impact of the quality of women's interactions with their social networks towards their screening behaviour derived from the consideration of the findings, using elements of health-related behavioural models and other studies' findings. The Social Cognitive Theory (SCT) and the Theory of Planned Behaviour (TPB) were used to facilitate the understanding of how such beliefs and perceptions were formed (Sections 6.2 and 6.2.1). The impact the environment (social networks) and particularly the family members, close friends and trusted doctors (significant others) had on breast screening behaviour were associated with elements of the SCT and the TPB respectively. In particular, the SCT supported the associations between Greek women's breast screening behaviour and their environment. Such an element of the SCT was relevant to the input Greek women received from their general interaction with their social networks. In addition, family members, close friends and doctors on some occasions, reflected on the significant others of the TPB, who were of instrumental importance in shaping females' beliefs, perceptions, emotions and thereby breast screening behaviour. Nevertheless, the findings added that not only the

nature of significant others (as supported by the TPB), but also their quality were of high influence. Finally, associations between the stages of behavioural change of the TTM and the various behavioural stages/categories of Greek women were identified. This emphasizes the importance of women's needs at each behavioural stage and it could provide the basis to apply necessary interventions. Interestingly, the findings added new elements on the TTM due to the fundamental role of the quality of interactions identified here, and not their quantity, as originally supported by the TTM (Section 6.2.3).

As mentioned previously, the essential influence of the immediate network and significant others were not limited only to the formation of women's beliefs and perceptions, but also affected interviewees' emotional responses to breast cancer and its early detection. Such an impact is presented and analyzed in detail in the next section.

### **6.3 Understanding the Emotional Responses to Cancer and Screening**

As mentioned above, the quality of the relationships and interactions between women and their social networks was what appeared to significantly influence mammography screening behaviour. The quality of meanings, information and education women received from their significant others had a corresponding influence on their mammography screening behaviour. As explained earlier, the stage between the received influences and the screening behaviour was the formation of beliefs, perceptions, and emotional responses in relation to cancer and breast screening. These could be positive or negative, and thereby lead to a particular screening behaviour (participation or abstinence). Reference has already been made to the apprehension of the formation of beliefs and perceptions supported by constructs of the SCT and TPB. With regard to the emotional responses, fear was identified as the most common feeling responsible for females' behaviour.

In this section, fear caused around cancer and the way this affects Greek women's breast screening behaviour is analysed. The possible reasons for fear's opposing effect in relation to breast screening behaviour are presented and supported by the necessary literature and existing theories. In particular, associations among women's breast cancer experiences, their perceived risk of developing breast cancer in the future, fear and their screening behaviour were identified. Thus, this study adds knowledge regarding the above associations, identified in relation to mammography screening behaviour.

Similar to the formation of women's beliefs and perceptions, the fundamental influences arising from their immediate network were also identified as responsible for the formation of their emotional responses to cancer and screening. Such an emotional response was mainly fear of cancer. In particular, breast cancer experiences including those of family members and close friends who developed breast cancer and in most occasions died from the disease, had a fundamental impact on mammography screening behaviour. The particular experiences had contradictory impacts, as they appeared to either positively or negatively influence breast screening perceptions and emotions towards participation in mammography screening. Similar findings were

reported by other studies (Tejeda et al., 2009; Peek et al., 2008; Ogedegbe et al., 2005; Ishida et al., 2001).

Apart from the strong influence such breast cancer experiences had on women's behaviour, the general education women had from their immediate network and the development of a breast problem also determined the effect of fear on mammography screening. In the following sub-sections, fear's two opposing effects are presented, analysed and explained, in the light of other researchers' findings and existing theories. Perceptions of the risk of developing breast cancer and the phenomenon of optimistic bias are also associated with fear of cancer, as part of the explanation of its formation.

### **6.3.1 Fear as a Motivation**

The fear of possibly developing breast cancer acted as a motivation for many Greek women who regularly participated in mammography screening. Almost all of them had experienced breast cancer through a close friend or relative, and emphasized the impact such experiences had on their screening behaviour. A consistent association between high perceived risk of developing breast cancer in the future and breast cancer experiences arising from women's immediate social network was identified in this study, as well as in a variety of other research studies (Tejeda et al., 2009; Trigoni et al., 2008; Katapodi et al., 2004). Women who had an affected relative had a strong emotional response towards breast cancer, especially if they were closely involved in the care of the affected relative. Such emotional responses were conceptualized as either worry, anxiety or concern (Katapodi et al., 2004). Similarly, in a qualitative study of Trigoni et al. (2008), many of the health care professionals who were interviewed said that women were motivated to have mammography screening if they had experienced breast cancer through a relative who had this disease. Tejeda et al. (2009) also claimed that breast cancer experiences arising from family or friends led most of the 40 Mexican women interviewed in their study to participate in mammography screening. Breast cancer experiences resulted in Greek women's fear of possibly developing breast cancer in the future, increasing their perceived risk of possibly developing breast cancer. As also supported by Katapodi et al. (2004), perceived risk is an important motivation for protective health-related behaviours. It is

therefore essential to understand the associations among breast cancer experiences, perceived risk, fear, and the way these act as a motivation to mammography screening participation.

Regular participants in mammography screening in this study aimed to transform their fear of cancer, caused by their breast cancer experiences and thereby their high perceived risk of cancer, into relief. Most of them adhered to mammography screening in order to feel relief from their fear and anxiety after a negative mammography screening test. In these cases, fear acted as a motivation to mammography screening participation. Similarly, for the majority of the participants in the study of Silverman et al. (2001), gaining peace of mind from a negative test was of great importance. Ransohoff (1997) added that the relief women get from a negative result on a screening mammogram is the difference between the perceived probability of cancer before mammography screening and the perceived probability of cancer after a negative result on mammography. Nevertheless, it was unclear for Ransohoff (1997) whether such relief is due to a better understanding of women's actual risk. Contrary to Ransohoff (1997), a substantial number of Greek participants of mammograms was found to derive relief from a negative mammography screening test, due to their realisation of their average breast cancer risk. Such a phenomenon supports the importance of the influences arising from the immediate network.

Interestingly, there were two different categories of women in this study who had elevated perceptions of risk and used their fear of cancer as a motivation to adhere to mammography screening. The first one was women who had a high perception of breast cancer risk, due to the influences upon them, particularly from their immediate social network, as mentioned before. These women believed in early detection of breast cancer from a young age, and were regular participants in mammography screening test. Similar to this group of women, Silverman et al. (2001) found that more than half of the participants in their study perceived their participation in mammography screening as a way of minimizing potential regret, or as many women stated: "better safe than sorry".

The second category was comprised of women who adhered to mammography screening due to a breast problem they initially developed, this being the reason that

they adhered to mammography screening test. They aimed to feel relief from their worry of possibly being diagnosed with breast cancer. In addition, this group of women had a high perception of risk, and also used their fear of cancer as a motivation, even though the actual reason for the initiation of such behaviour was their breast problem. In this case, immediate networks did not feature as prominently in relation to women's behaviour. On the contrary, women's breast problem led to their fear, high perceived risk of developing breast cancer and thereby to their adherence to mammography screening.

The above issue emphasizes the differentiation between women's needs, even though they correspond to the same behavioural stage (maintenance). As identified earlier (Section 6.2.3), women who belonged within the maintenance stage (TTM stages, Figure 11) were both those who participated in mammography screening from a young age, influenced by their immediate network and those who started participation due to a breast problem. It is clear here that despite the different reasons responsible for their participation in mammography screening, both groups had a high perception of risk, and their fear acted as a motivator. Nevertheless, emphasis should be made on the different emotional and physical needs between the above groups of women. Acknowledgement of such needs could be especially important for future clinical intervention and health care professionals' roles.

### **6.3.2 Fear as a Barrier**

Apart from the positive influence breast cancer experiences had on women's emotions (fear), perceived risk and breast screening behaviour, they were also found to have the opposite effect. On some occasions, breast cancer experiences led to extended fear of cancer, leading some women to abstain from mammography screening. Indeed, two of the abstainers from mammography screening denied participating in any kind of breast screening test, due to the traumatic psychological impact their relative's breast cancer experiences and death had on them. Similarly, other researchers (Meissner et al., 2004; Nekhlyudov et al., 2003; Ishida et al., 2001; Silverman et al., 2001; Dilhuydy and Barreau, 1997) concluded that previous experiences may block women's participation in mammography screening. In a similar qualitative study (Ishida et al., 2001), the breast cancer experiences arising from women's family or

close friends had a negative influence in relation to participation in mammography screening. All participants in this study had known someone with cancer, either a family member or a friend, who finally died. Such negative experiences led them to perceive cancer as a terrible, painful disease that caused suffering and death. They actually perceived breast cancer as a fatal disease due to the unpleasant or shocking feelings that arose from a diseased relative or friend (Nekhlyudov et al., 2003; Ishida et al., 2001). Thus, it is interesting that in some cases, breast cancer experiences could also create fear as a barrier to participation in mammography screening. It is thereby possible that the way and level women experience death due to breast cancer determines the kind of effect such experiences have on their emotions (fear), and thus on their screening behaviour.

Shocking breast cancer experiences were not necessarily the only issue responsible for the creation of fear as a barrier and women's abstinence from mammography screening. Indeed, lack of symptoms was an excuse for non-regular participants or abstainers, who used their fear of cancer as a barrier to their participation. They did not participate in mammography screening unless they had a problem or symptom, having low perceived risk. Such a low perception of breast cancer risk, unless they developed a breast problem/symptom, accompanied by women's high fear of breast cancer, comprised a barrier to their participation in mammography screening. In a recent qualitative study in Greece, some women stated fear of detecting something serious, such as breast cancer, as the reason for their abstinence from mammography screening (Trigoni et al., 2008). However, contrary to this study, Trigoni et al. (2008) identified that fear of the perceived pain during mammograms and fear of radiation were additional inhibitors to participation in mammography screening.

Low perceived risk and fear were accompanied by over-optimistic perceptions, which seemed to lead the Greek women in this study to abstain from regular mammography screening. Over-optimistic perceptions were a characteristic of the abstainers who believed they would never develop breast cancer. In other words, their fear of possibly developing breast cancer led them to deny such a possibility, believing that such a negative scenario would never happen to them, but to somebody else. Such a low perception of risk is linked to the phenomenon of optimistic bias. The phenomenon of optimistic bias has been identified by a number of researchers (Alicke

et al., 1995; Messick et al., 1985; Svenson, 1981) and refers to people who systematically believe that they are better than others or they are less likely to face up to and deal with life's negative events (Katapodi et al., 2009). Weinstein (1989) explained that unrealistic optimism or optimistic bias occurs when people perceive their own personal outcomes as being more positive than those of other people in similar circumstances. At an individual level, this optimism may be realistic or unrealistic, but when this kind of belief represents a group of people, then this phenomenon is described as unrealistic optimism or optimistic bias (Weinstein, 1989, 1982). Thus, optimistic bias could be a possible further explanation for Greek women's low perception of risk and abstinence from mammography screening, unless they develop symptoms. A variety of previous studies also used optimistic bias to explain females' low perception of risk and their abstinence from breast screening (Tejeda et al., 2009; Ogedegbe et al., 2005). The abstainers from mammography screening in this study believed that they do not need this test due to good health or an absence of symptoms attributable to ill health.

Fear of cancer, low perception of risk, and optimistic bias are further linked with heuristic reasoning, which is even more intense for women with a family history of breast cancer. In this study, abstainers from mammography screening were also women who had a family history of breast cancer. These women, regardless of the hazard of possibly developing breast cancer, estimated their own risk as being less than that of their peers. Heuristic reasoning appeared to be being used to estimate personal cancer risk. In other words, humans compensate through the use of logical short cuts, known as heuristics (Facione, 2002). They frequently overestimate their ability to control events by failing to account for actual contingencies and distorting their actual control over uncontrollable outcomes. Use of this heuristic device commonly results in an optimistic estimate of personal control of poorly controlled or uncontrollable hazards (Facione, 2002). Facione (2002) concluded that most women perceived their personal risk of breast cancer to be lower than that of other women, which corresponds with this study's findings. For the particular category of Greek women, their psychological response to negative feelings and fear is denial and repression. This happens particularly when the person feels otherwise powerless to control or mitigate a hazard (Peek et al., 2008). Hence, optimistic bias and heuristic reasoning explained fear as a barrier to mammography screening participation.



Women's negative emotional responses to cancer and screening led them to abstain from mammography screening.

Thus, part of this study's findings suggest the association between females' breast cancer experiences, their emotions (fear), and perceived risk, which had corresponding consequences to breast screening behaviour. Similar to this study's findings, Tejeda et al. (2009) concluded that some degree of fear may encourage women to have screening. One of the factors that led to such a fear was Greek women's experiences with people who had breast cancer. In other words, the influences and breast cancer experiences women had, may have increased their fear about the disease and their perceived risk and functioned as a motivating factor toward screening (Tejeda et al., 2009). Nevertheless, this study further identified that shocking breast cancer experiences arising from women's close family members had created a high level of fear and led to their abstinence from breast screening. Thus, it could be assumed, based on the findings of this study, that moderate levels of fear can motivate women to use mammography, while high levels of fear may prevent women from getting mammograms. Nevertheless, further investigation of this issue is needed. The aforementioned influence of breast cancer experiences arising from women's immediate social network towards emotional responses to cancer and screening is diagrammatically presented in the next section (Figure 12).

In summary, the emotional response to breast cancer and screening was mainly fear of cancer, which worked either as a motivation or barrier to mammography screening behaviour. Interestingly, part of fear's opposing effect was explained and supported through the use of other researchers' findings and the phenomenon of optimistic bias. Fear of cancer was associated with low and high perceived risk of breast cancer, which mainly accrued from breast cancer experiences arising from women's immediate network.

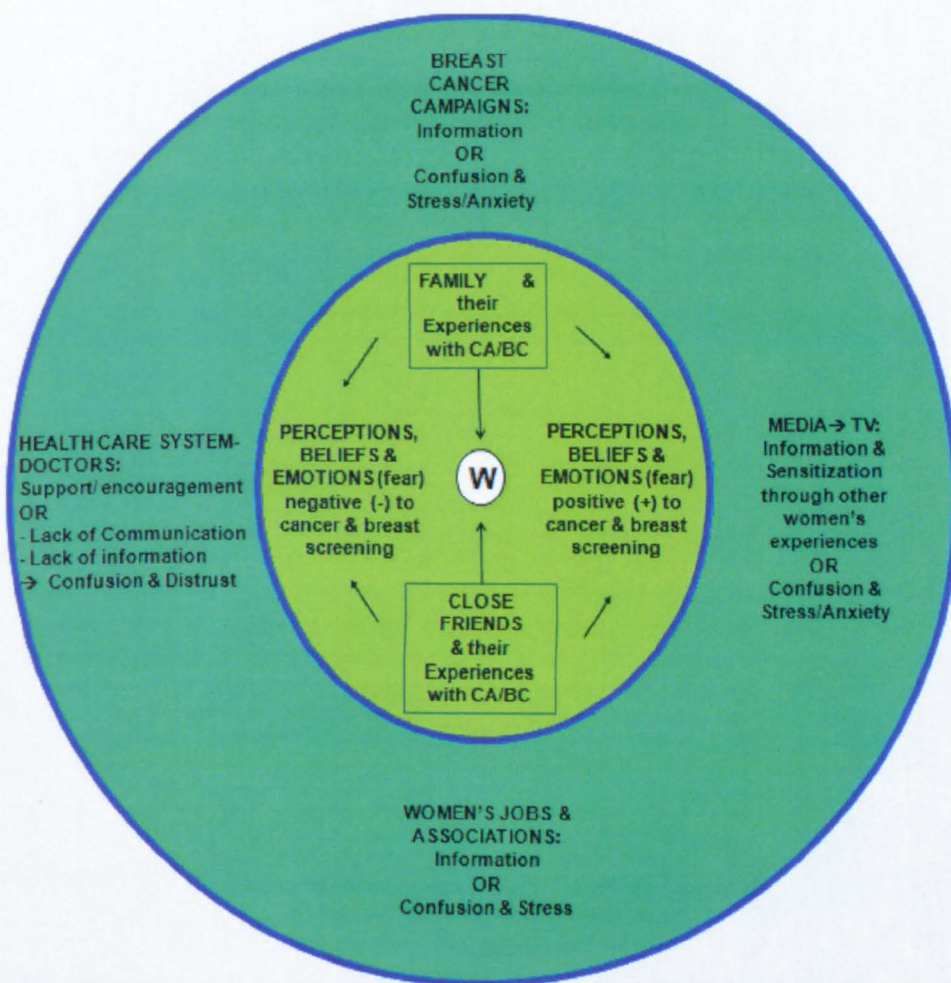
## 6.4 Concept Mapping

In the previous sections (6.2 and 6.3) the interaction between women and their social networks was presented and discussed in the light of existing theories and literature. It was concluded that such interactions were of high importance in relation to mammography screening participation, and particularly those arising from women's immediate social networks. Interestingly, depending on the quality of such interactions, they had a correspondingly positive or negative impact on women's beliefs, perceptions, emotions and thereby behaviour in relation to mammography screening. In this section, a diagrammatic presentation of the above interactions women had with their social networks and the links between them is made. Such a diagrammatic representation of the findings is a tentative model based on the findings' interpretation, which aims to explain mammography screening behaviour.

In Figure 12, interviewees' interactions with their social networks are diagrammatically illustrated. Elements of the SCT were used to support and explain the important influence of environment/social networks towards women's mammography screening behaviour (Section 6.2). In Figure 12 women are centred in the middle of the concentric circles, which represent (from the inner to the outer) the influences they had from a young age as they grew older (Section 6.2), as well as the strength of such influences, from the most to the least influential. The inner circle represents the fundamental influence of the immediate social network, being located closer to women (W). It includes the influences that arose from the women's interactions with their family, close friends, and school on some occasions (immediate network, Figure 9). These were the first influences women had in their lives in relation to breast screening and which were identified as determinative towards women's breast screening behaviour later on (Sections 6.2.1 and 6.2.1.1). Interestingly, depending on the quality of interactions women had with their immediate network, they formed a corresponding breast screening behaviour. The quality of information and meanings women received regarding breast cancer and screening were responsible for the formation of their beliefs, perceptions and emotions (fear) in relation to cancer and breast screening. These were encouraging or inhibiting to mammography screening participation and thereby led women either to participate in or to abstain from this screening test (Sections 6.2.1, 6.2.1.1 and 6.3). The formation of the

particular normative beliefs and the importance of the immediate network's members (significant others) was supported and explained by the use of the TPB (Sections 6.2.1 and 6.2.1.1). In addition, elements of the TPB and optimistic bias were used to facilitate the understanding of fear's opposing effect on mammography screening behaviour, being an important consequence of breast cancer experiences women had arising from their immediate social networks (Section 6.3).

On the other hand, the outer circle in Figure 12, being located away from women (W) represents the moderate to low influences women had later on, which arose from their interaction with their broader social network (e.g. females' interactions with the Primary Health System (PHS) and doctors, either through their engagement with mammography screening or with their gynecologist). Mass media, breast cancer campaigns and women's jobs and associations also belonged within the broader social network (Section 6.2.2, Figure 10). With the exception of a trusting and communicative relationship with personal doctors, women's interaction with their broader social network was of low impact on the formation of their outlook on mammography screening. Interestingly, depending on women's existing perceptions, beliefs and emotions regarding breast screening, which pre-existed from influences arising from their immediate network, broader networks could also have an opposite effect (Section 6.2). This meant that broader networks created negative emotions for those already abstaining from mammography screening, or enhanced the already positive perceptions, beliefs and emotions of participants undertaking this test. The opposing effects broader networks could have are presented in the outer circle of Figure 12. The above differentiations among Greek women's mammography screening behaviour emphasizes the importance of the quality of women's interactions with their immediate and broader networks.



**Figure 12:** Influences arising from the immediate and broader networks: their strength toward mammography screening behaviour

## 6.5 Contributions

The contributions of this study in relation to existing studies are threefold. The first is related to the importance of the role of women's interactions with their social networks, and what determined their level of influence. The second is the fact that the same issue, fear of cancer, can have an opposing effect, and the explanation of such a phenomenon. In particular, associations among breast cancer experiences arising from the influence of women's immediate social network, perceived risk of possibly developing breast cancer, fear of cancer and screening behaviour were identified. Thirdly and finally, this study contributes to our understanding of breast cancer screening within the Greek context, by exploring for the first time factors that influence mammography screening behaviour amongst Greek women. The support and information needs of those women in relation to cancer and screening have also been identified throughout the conduct of this research study. The first two contributions are presented below, followed by those within the Greek context.

As mentioned above (Section 6.2), the interpersonal interaction between women and their social networks appeared to be what actually determined their mammography screening behaviour. Contrary to the data of previous studies, which were focused on women's education and familiarisation with breast screening through mass media and cancer campaigns – broader network (for example McCaul et al., 1999), this study goes further and emphasizes the fundamental role of personal relationships and interactions. These include women's interactions with their family members, close friends (immediate network) and doctors in some cases. This study points out the necessity of focusing on influences arising from women's immediate network, compared to those arising from their broader network. Additionally, the quality of women's interactions with their immediate network determined the kind and level of influence they had regarding breast screening behaviour. Thereby, new dimensions of educating and informing the Greek population are proposed, adopting principles based on the quality of interpersonal communication and the immediate network. Even though there are studies which support the influence arising from family networks and doctors (for example Trigoni et al., 2008), not all of them identified their importance and the opposing effect they can have on mammography screening behaviour depending on their quality, as presented here. This finding has also added to our

understanding of the TPB and TTM (Sections 6.2.1.1 and 6.2.3). In particular, the quality of significant others and not just their nature (as originally supported by the TPB) were responsible for mammography screening behaviour. In addition, the quality of significant others and not their quantity (as originally stated by the TTM) determined mammography screening behaviour.

This study further contributes by adding knowledge not only to the opposing effect of interpersonal interactions, but also of fear (Section 6.3). Fear of cancer, as part of participants' emotional responses, did not necessarily lead to women's abstinence, as identified in other studies (Tejeda et al., 2009; Trigoni et al., 2008; Remennick, 2003), but acted also as a motivation to their participation. Throughout the attempt to explain the opposing effect of fear in this study, associations among women's breast cancer experiences, perceived risk of cancer, fear and their breast screening behaviour were identified (Section 6.3). Thus, the above associations identified throughout the analysis of the findings emphasize the area health care providers may focus on in order to better understand women's needs, and further educate and consult them in relation to mammography screening and breast cancer.

### **6.5.1 Contribution within the Greek Context**

Despite the general decrease of mortality rates in the rest of Europe, in Greece mortality rates due to breast cancer are still high (Mauri et al., 2009). Only 5% of women discover a malignancy in their breasts at an early stage through mammography screening (Keramopoulos et al., 2005). This hinders subsequent treatment for those detected with breast cancer and leads to poorer quality of life. In a recent study (Dimitrakaki et al., 2009) it was found that only 3.8% of Greek women aged 50 to 69 underwent mammography screening in the last three years. This could be associated with social factors, which roots should be further investigated (Dimitrakaki et al., 2009). According to previous studies in Greece, such abstinence could possibly be due to the repercussions of the deficiencies and dysfunctional situation of the Greek Primary Care system, as noted at the beginning of this thesis, which leads to the general dissatisfaction of the citizens (Fyntanidou and Petropoulou, 2000). However, such a factor alone cannot be considered the only explanation for women's abstinence. Furthermore, there is no clear evidence about its existence. Many of the studies

conducted in Greece on this issue are unable to be critiqued in relation to their reliability and validity due to a lack of clear and detailed description of their methodologies.

Interestingly, the findings of this study also highlight problems with the Greek Primary Care system; however, these were not identified as the main inhibitors to the interviewees' participation in mammography screening. According to the reports of participants in mammography screening there is disorganisation in the existing breast screening process in Greece. A variety of other obstacles were identified by current participants in mammography screening. As was already stated (Chapter 2, Section 2.2.1), there is no national mammography screening programme in Greece, so women have to seek advice, care and screening on their own initiative. Part of this study's findings indicates that access to health care remains an important issue for many individuals. Trigoni et al. (2008), who conducted a similar research in Crete (Greece), confirmed the existence of such obstacles, such as difficulties in arranging mammograms, and reported them as being responsible for women's abstinence from mammography screening. Difficulties in scheduling an appointment usually corresponded to four, five or six months after referral, resulting in long queues and waiting times before having a mammography screening test (Trigoni et al., 2008). However, such obstacles were not the primary reason for women's abstinence in the study presented here. Instead, they led some of the regular participants identified from the interviews to show a preference to the private sector in order to get their mammogram. According to McCaul et al. (1999), high socio-economic status relates positively to screening levels. People with higher incomes are able to surmount the cost barrier, and therefore they may visit physicians more frequently and thus receive screening recommendations (McCaul and Tulloch, 1999). Interestingly, in this study, a number of women who had the financial ability to have screening in the private sector preferred to use public hospitals. They mentioned doctors' greater experience and expertise as the reason. Thus, despite the obstacles women faced during their engagement with mammography screening, many of them continued their participation.

On the other hand, other issues acted as facilitators in relation to women's engagement with breast screening, encouraging them to adopt mammography screening on a

regular basis. This was free mammography screening tests, provided by their job and insurance. As Ogedegbe et al. (2005) also identified that free or low cost mammograms provided by women's employers and their insurance services were a facilitator of women's participation in breast screening. Thus, the findings presented here indicate that while there are obstacles within the breast screening process in Greece, these were probably not responsible for women's abstinence from mammography screening, while provision of low cost or free mammograms facilitated their participation in this test.

Despite the variety of studies carried out in other European countries in the same field, in Greece, the subject had only been superficially explored. This study is one of the few academic studies (Trigoni et al., 2008; Giakimoba et al., 2003; Borgias et al., 1998) and one of the two qualitative studies (Trigoni et al., 2008) which have investigated the factors that influence participation in mammography screening in Greece. Most of the findings presented here contradict those of the above studies in Greece.

Contrary to the findings presented here, which emphasized the influence women received from their interaction with their social networks, previous research in Greece, and particularly in rural areas (Trigoni et al., 2008; Giakimoba et al., 2003; Borgias et al., 1998), identified that the small number of women participating in mammography screening test was mainly due to the lack of information women had on breast cancer and its early detection (Giakimoba et al., 2003; Borgias et al., 1998). However, these two studies were conducted using a quantitative approach and did not investigate the sources of information and education. Additionally, they did not focus on both factors that lead women either to participate in or to abstain from mammography screening, as was attempted here. Thus, the conduct of this qualitative study added new knowledge on the motivators and inhibitors of Greek women's breast-screening behaviour.

Similar to the aforementioned contradictory findings, the qualitative study of Trigoni et al. (2008) identified doctors' influence as one of the most important factors in women's participation in mammography screening. This was conducted by the use of semi-structured individual interviews, approaching middle-aged women and their



primary care physicians in rural areas. Additionally, fear of cancer was identified only as a barrier to participation in mammography screening in the study of Trigoni et al. (2008), while the long distance from the screening centre was an extra barrier for those women in Crete. Thus, despite the contradictory data between the findings of this study and of Trigoni et al. (2008), the different sample and setting could possibly explain such contradictions between their findings.

In summary, contrary to previous research studies, the findings here suggest new focus on the sources of information and education women receive, emphasising the role of interpersonal interactions with their social networks and particularly their immediate network. Thus, this study emphasizes new areas that the health care professionals in Greece could focus on, in order to better inform women on breast cancer and its early detection.

## 6.6 Limitations

This study, despite its attempt to accomplish its aim and objectives by using the most appropriate methods and methodological approach, has certain limitations.

Firstly, a purposive and not random selection of women's associations was performed. However, such a selection was made for two reasons. The first one was that this study did not include associations which were focused on health themes or cancer. Such an exclusion was made in order to include women with the characteristics of the general population and to avoid having a biased sample with women who are educated on health issues and have particular physical and psychological needs. The second reason was to increase the possibility of having a variety of focus themes, and thereby hoping for a variety of mammography screening behaviours and demographic characteristics. Such a form of sampling was appropriate for the methodology adopted in this study, since it aimed to ensure the accuracy of the sampling operation (Oppenheim, 1992). Women in this study belonged to a variety of different mammography screening behavioural stages.

Despite the different behavioural stages women belonged and the variety of most of their demographic characteristics, most of them had an average to advanced educational level. Such an issue could be a limitation of this study, since women's advanced educational level could have influenced their reports regarding their mammography screening behaviour and perceptions of this screening test. Thereby, attention on the nature of associations should be drawn and the possible limitations such a sample could have.

A further possible limitation of the nature of women's associations could be their role on the quality of influence social networks had to mammography screening behaviour. The fact that social networks had a high influence towards participation in or abstinence from mammograms, could be due to the positive values women had towards social networking, since they were members of women's associations. Thereby, participants in mammography screening may have stated their immediate network as a factor of high influence towards their behaviour due to their familiarity with social networking as members of women's associations. Similarly, abstainers

from mammography screening may have put emphasis on the lack of communication they had with their social environments and particularly their immediate, influenced by the nature of relationship they had built in the associations they belonged to.

In addition, the findings cannot be generalised to the general female Greek population and this could be a limitation of this study. Despite the attempt of this study to approach women with the characteristics of the general population by approaching healthy women belonging to female associations, due to the nature of this qualitative study these findings represent only those women who took part in the study. Nevertheless, transferability of the findings could be made into future research studies (Tashakkori and Teddlie, 1998). In other words, the findings identified here can be used as the basis for future investigations. For example, the exact level of impact the immediate and social network can have could be measured in a future quantitative study.

Finally, there were some challenges throughout the translation procedure of the findings and themes revealed in Greek language into English. The translated quotations that were used to support the findings of this study had carefully been selected in order to be clear and to represent the findings the researcher aimed to present. In addition, since the analysis of the data was made in Greek, the findings and themes revealed had to be translated into English within the adequate way in order to transfer the level of their strength and importance. This part was identified as one of the most time consuming procedures within this study. Nevertheless, this was to avoid lose of meaning and to assure a robust and clear presentation of the findings and revealed themes.

## **6.7 Implications**

The implications of the findings of this study are threefold, and include the implications for practice, policy and research; they are presented in the following sections.

### **6.7.1 Implications for Practice**

Health care professionals, including doctors and nurses, might be better placed giving more attention to the interpersonal relationships women have with their social networks, and the way these influence women's beliefs, perceptions and thereby breast screening behaviour. Emphasis might be placed on understanding more about women's immediate network, due to the strong influence they appeared to have on mammography screening behaviour. The interpersonal relationship and communication with doctors, despite the moderate effect identified here, is a part health care professionals could also focus on, in order to advance such communication with women, based on their needs identified in this study. Throughout the advancement of this relationship, doctors as well as nurses may be able to more easily access women's background and evaluate their needs in relation to breast screening and cancer. Such an assessment could further be used for health care providers' interventions in order to better and more efficiently inform and educate women about breast cancer and familiarize them with breast screening. The above interventions could be applied in order to clarify to women the role of regular mammography screening. Nevertheless, these may not aim to necessarily modify people's behaviour, but to furnish them with the necessary information in such a way that they will be able to make an informed decision.

Nurses could get involved in educative practices and the development of health actions, including early detection of breast cancer (Tonani and Carvalho, 2008) since they have a health education agent role in a multi-professional team (Tonani and Carvalho, 2008). Since family, close friends and school were of essential influence, mothers could initially be advised on how they could build a trusting and communicational relationship with their children and how to educate them on such issues. Advice on the relationship among family members and the way parents provide information on early detection of breast cancer could be given. Thus, the

education of young mothers, as well as parents, could contribute in building a more open and communicative relationship with their children on subjects such as breast screening.

Additionally, mastologists could focus more on the psychological needs of women who go for mammography screening rather than focusing only on the causes of actions or treatment. This requires that doctors spend more time with female patients and are qualified with the necessary communication skills. Policies that allow clinicians to see and connect with the same patients over time could also foster more effective communication, and thus better prospects for maintaining their health (Pasick et al., 2009). Permanent doctors could have a strong impact on patients' health, due to the better communication between them and consequently doctors' acknowledgement of patients' actual needs. Primary care physicians and nurses can play an important role in communicating with patients and educating them about what to expect during a screening mammogram (Peek et al., 2008). This could help women interpret their experiences and express their needs and concerns to doctors and nurses. Thus, doctors could also focus on the way they approach women and provide them with information and advice.

### **6.7.2 Implications for Policy**

Advancement of the Greek Primary Health System (PHS) could be made. The long queues in order to get a mammography screening test in the public sector, as well as the limited time of doctors' consultations with women, were identified as important issues that concern Greek women. Apart from the disadvantages of the national health sector in Greece, high-cost mammograms in the private sector forced some women to resort to the laborious bureaucratic procedures of their insurance providers in order to avoid the full cost. Despite the low influence the existence of the above obstacles had on women's breast screening behaviour, throughout their engagement with mammography screening, such obstacles could be the reason for their possible future abstinence. Therefore, a better assessment of the primary health care services such as mammography screening test may be taken into account for future interventions in Greece, in order to limit the above obstacles and advance such services based on women's needs.

### **6.7.3 Implications for Research**

The findings identified here could provide the basis for future research studies related to breast screening. Elements of the tentative model this study created could enlighten similar future studies which may use it as part of their conceptual framework or for the explanation of their findings. Additionally, the findings of this study could be used in future research studies which aim to investigate the fluctuation of the influence the immediate networks have to current and future breast screening behaviour. Thus, the findings could comprise a useful database for future research associated with the investigation of screening behaviour and the advancement of behaviour models and theories.

## 6.8 Concluding Points

This study provided insights into women's breast screening behaviour, their beliefs, perceptions and emotional responses towards cancer and screening. The influences that arose from women's immediate network had a strong impact towards their breast screening behaviour. Such strong influences were initially responsible for the creation of beliefs, perceptions and emotions (fear) in relation to breast screening and cancer and thereby for mammography screening behaviour. These were mainly Greek women's experiences arising from their interaction with their family, close friends (immediate network), and on some occasions personal trusted doctors. Associations among influences arising from the immediate social network, perceived risk of developing breast cancer in the future, fear and breast screening behaviour were identified, which facilitated understanding the opposing effect of fear.

Clearly, the interpersonal relationships between women and their social networks had an important influential role towards their breast screening behaviour, while mass media, cancer campaigns and health care services (broader network) were of moderate to low impact. Interestingly, the quality of the interactions, mainly between women and their immediate social network, determined their participation in mammography screening.

Depending on their behaviour, women were categorised into behavioural stages - groups which mirrored the stages of the TTM. This emphasized the different needs women have in relation to their screening behaviour and thus the different influences they received. Elements of the SCT, the TPB and the TTM were used to interpret and explain the findings and thus build a tentative model that represents them. Such a model could be used in future studies, where it could be utilised when applying interventions related to participation in mammography screening.

Thus, this study highlighted the points where such interventions could be focused, by identifying the most essential influences on women's breast screening behaviour. It is important, though, that such interventions are applied according to the existing knowledge, education and familiarisation women have with breast cancer and screening at each behavioural stage.

## **APPENDIX I - Questionnaire**



## Questionnaire

Dear Madam,

My name is Aikaterina Kaltsa I have graduated from the School of Nursing at the Academic Technological Educational Institute (A.T.E.I.) of Athens. I am currently undertaking a full-time PhD course at the University of Nottingham in Great Britain. As part of the course I am carrying out research in which I aim to explore Greek women's perceptions of mammography screening, throughout an investigation of the factors which influence participation in screening for breast cancer. Since breast cancer is the most life threatening disease for women nowadays, being breast aware and able to detect breast cancer at an early stage is of essential importance, especially for women over 40 years old. The outcomes of this study could then be used to create health care centred or social programs aimed at expanding the knowledge and improving the professional skills of young nurses. Advancement on the way health care professionals as well as society should approach Greek women nowadays in order to fulfill their needs on early detection of breast cancer could be also achieved.

A participant information sheet is enclosed providing all the necessary information in association with the nature of this study. Your participation is extremely valuable to me, and I would greatly appreciate it if you could find the time to read the information sheet and fill in the following questionnaire.

For any further information regarding this study, please do not hesitate to contact me or my supervisor Professor Karen Cox.

**Contact details:**

University of Nottingham, School of Nursing

Faculty of Medicine and Health Sciences

University of Nottingham, Medical School

Queen's Medical Centre

Nottingham NG7 2UH

E-mail address of Aikaterina Kaltsa: [ntxak2@nottingham.ac.uk](mailto:ntxak2@nottingham.ac.uk)

E-mail address of Professor Karen Cox : [Karen.cox@nottingham.ac.uk](mailto:Karen.cox@nottingham.ac.uk)

**Thank you in anticipation of your valuable help**

## **Greek women's perceptions of mammography screening: An investigation of the factors which influence participation in screening for breast cancer.**

This questionnaire has been designed for the accomplishment of this survey's purpose and consists of twenty one multiple-choice questions, which are classified into three sections. The first section has been constructed in order to attain information regarding the demographic characteristics of each participant including their family history. The second section has been designed to obtain information regarding the participants' behaviour towards mammography screening. Finally, the last section comprises questions, which aim to explore participants' perceptions towards mammography screening and a brief justification of their particular behaviour towards mammography screening.

*Definition of mammography screening:* Mammography-screening can be defined as an X-ray early detecting test that can detect tumours years before they are clinically palpable, at a time when less extensive therapeutic interventions may be required.

Please answer the following questions by ticking the appropriate boxes. There is only one answer for each question, apart from those where it has been stated to choose more than one answers if appropriate.

**Thank you for taking the time to complete this questionnaire.**

### **Section A: Declaration of your demographic characteristics including family history.**

#### **1. Please state your age**

- ☐ Under 40
- ☐ 40 – 49
- ☐ 50 – 59
- ☐ 60 – 70
- ☐ Above 70

2. Please state your marital status

- ☐ Married
- ☐ Unmarried
- ☐ Divorced
- ☐ Widow

3. Please state your education level

- ☐ Less than high school
- ☐ High school graduate
- ☐ College level/IEK
- ☐ University level/TEI/AEI
- ☐ Higher than University level (Master, PhD)

4. Please state your Nationality

- ☐ Greek
- ☐ Other. Please state: .....

5. Do you have a history of breast cancer in your family?

- ☐ Yes
- ☐ No
- ☐ Don't know / I'm not sure

6. If you answered 'Yes' to question Nr 5, who was the person who had breast cancer related to you?

**(Tick more than one if appropriate)**

- ☐ Me
- ☐ Mother
- ☐ Sister
- ☐ Daughter
- ☐ Grandmother
- ☐ Aunt
- ☐ Other (please state) \_\_\_\_\_

**Section B: Your behaviour towards regular mammography screening**

7. Have you ever had mammography screening?

☐ Yes

☐ No

8. If you answered “Yes” in Question N° 7, please choose one of the following situations you believe you belong into, otherwise go straight to Question N° 9.

☐ I had a mammogram in the past, but I have no intention to obtain one in the next 2 years.

☐ I had a mammogram in at list the past 2 years, and I intend to continue practising mammography screening in the future on an annual or two-year basis.

9. If you answered “No” in Question N° 7, please choose ONE of the following situations you believe you belong into

☐ I have never had a mammogram and I have no intention to have one in the coming 2 years.

☐ Never had a mammogram, but intends to have one in the coming 2 years.

10. Do you usually resort at the National or the Private Sector to get a mammography screening?

☐ National Sector

☐ Private Sector

☐ Both

☐ Neither

**Section C:** Information regarding your perceptions towards mammography screening and a brief justification of your behaviour towards mammography screening.

11. You are more likely to go for mammograms if your doctor supports it is important for you.

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

12. Having mammograms help find very small lumps at an early stage which cannot be found from doctors or nurses (Clinical breast examination)

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

13. Having mammograms every year or two gives you a feeling of control over your health

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

14. Women need mammograms even when they have no family history of breast cancer

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

15. Having mammograms causes a lot of worry or anxiety about a possible detection of breast cancer

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

16. You do not need to have a mammogram unless you have some breast problem or pain

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

17. Embarrassment and uncomfortable feeling during a mammography screening would make you have second thoughts about getting one

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

18. The pain caused by having a mammogram is bad enough to put you off getting one

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

19. The waiting time until your mammography screening appointment puts you off from getting a mammogram

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

20. The cost of mammogram would cause you to hesitate about getting it

- ☐ Agree
- ☐ Disagree
- ☐ Don't know

21. You believe that it is God’s will to get breast cancer and therefore there is no point of getting a mammogram

- ☐ Agree
- ☐ Disagree
- ☐ Don’t know

Tick the following box if you would like to take part to an individual interview regarding the in-depth factors that lead you to the particular behaviour. Please provide your personal details below, so that I can contact you and book an appointment. Please also sign in the consent form that follows and you may keep one copy of it.

☐

.....

.....

.....

**Thank you again for taking time to complete this questionnaire.**  
**Your participation is very much appreciated. The results of this survey may be used to improve services for breast cancer.**

## **APPENDIX II - Interview Guide**



## Interview guide

As you can see from the information sheet this research project aims to explore your perceptions regarding mammography screening and the factors that influence your behaviour towards the particular early detecting test of breast cancer. Thank you for agreeing to take part in this work. I am interested to know about you, your beliefs, experiences and behaviour associated to mammography screening. Please feel free to say exactly what you want. I am interested in **your** story and **your** views and what you say to me will be treated in the strictest confidence. (Interviewer to tell something about herself, background, interest in this area of inquiry. Permission to tape record.)

- a) To get us started, I wonder if you would mind just saying a bit about yourself, telling me what do you think of breast cancer in Greece?

(Prompts)      \* How crucial do you think is the early detection of breast cancer disease nowadays?  
                     \* Which is your view of the essentiality of breast cancer nowadays?  
                     \* Up to which level do you believe women are threatened by breast cancer nowadays?

- b) With regard to you, would you mind telling me a few things about the particular behaviour you usually follow towards mammography screening?

(Prompts)      \* Do you practice mammography screening?  
                     \* How often do you get a mammography screening?  
                     \* For how long do you behave with the particular way?  
                     \* What do you intend to do in the future?  
                     \* Are there any other ways you believe can help women detect breast cancer at an early stage?

(Prompts) for a current or past *abstinence* behaviour towards mammography screening practice:

                     \* Is there a particular experience you had that made you change your mind?  
                     \* Would you like to get into more details about it?  
                     \* Have you taken any further measures to improve/change the particular behaviour?

- \* What do you think mostly influenced you in such a behaviour change?

(Prompts) for a *positive* behaviour - participation to mammography screening:

- \* Is there a particular procedure you usually follow to book an appointment to get a mammography screening?
- \* How do you feel of the particular procedure?
- \* Do you have to comment anything regarding the particular procedure?

c) What I would like to do now, is to focus on the factors that influence you to participate /or abstain from mammography screening

- (Prompts)
- \* What do you think mostly influence women to behave similarly to you?
  - \* Which ones of the mentioned factors do you think mostly influence women regarding their behaviour towards mammography screening?
  - \* What about the rest of them?

d) Just to think about things from a different angle, why do you think the particular factors have such a great influence?

- (Prompts)
- \* Is there any particular aspect that characterizes them?
  - \* What about the individual personality/characteristics each woman has?
  - \* What about the information women receive regarding mammography screening? Are they clear enough and from reliable sources?

e) Is there anything that you believe could possibly change your behaviour towards mammography screening *or* improve mammography screening procedure in Greece and the information regarding the importance of its adherence?

f) Finally, is there anything else you would like to state regarding mammography screening and the particular behaviour you currently follow?

General probes:

- Could you tell me a bit more about that
- What do you mean by....
- What could have been done differently
- Why do you think that happened
- How do you cope with....
- How did you find that experience
- How did that make you feel

(Offer thanks.)

### **APPENDIX III – Permission Letter**

**Permission letter from the President/Chair of the association**

**Issue/Theme:** "Permission for the distribution and collection of questionnaires as part of the research study"

**To:** Miss Aikaterina Kaltsa (BSc from the Technological Institution of T.E.I. of Athens), currently PhD student (2006-2009) at the University of Nottingham in the United Kingdom.

Replying to your request on the 28th of March 2008, we would like to inform you that we agree with the distribution of questionnaires to the members of our association and their further collection, since this is part of your research as a PhD student in the University of Nottingham, in the UK.

\*The President/Chair of the ..... Association

\*Name:  
.....

\*Signature:  
.....

\*Date:  
.....

\*Needs to be filled in

**APPENDIX V – Participant Information Sheet**



**University of Nottingham, School of Nursing**

Faculty of Medicine and Health Sciences

University of Nottingham, Medical School

Queen's Medical Centre

Nottingham NG7 2UH

**Study title:**

Greek women's perceptions of mammography screening: An investigation of the factors which influence participation in screening for breast cancer.

**Researcher:** Aikaterina Kaltsa: Graduate nurse from the Academic Technological Educational Institute (A.T.E.I.) of Athens.

**PARTICIPANT INFORMATION SHEET**

Dear Madam,

You have been invited to take part in a research study. Before you decide whether to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with friends and relatives if you wish to. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part or not. If you decide to take part you may keep this leaflet. Thank you for reading this.

**What is the purpose of this study?**

The aim of this research study is to examine Greek women's perceptions of mammography screening, by exploring sources of influence relating to decisions to utilize or abstain from mammography screening.

**What does taking part involve?**

This study involves women filling in a questionnaire and some of them taking part in interviews. If you decide to fill in the questionnaire, I would be grateful if you could answer all the questions honestly as possible, put the filled in questionnaire into the envelope provided. Then you can drop it in the locked mail box that is located at the secretary of your women's association you belong to. I will collect the particular mail box two weeks after the distribution of the questionnaires. It should take approximately 20 minutes to answer the questionnaire.

**Why have you been chosen?**

You have been selected to take part in this study, as a member of a Greek women's association. I would appreciate it if you could find the time to fill in the following questionnaire and contact me if you would like to further participate in an individual interview regarding the factors that led you to your particular behaviour towards mammography screening.

**Do you have to take part?**

Participation in this study is entirely voluntary. It is your decision whether to take part in this study or not. If you decide to complete the questionnaire it will be taken that you are giving your consent to take part in the study and you will be given this information sheet to keep. If you decide to take part in the interview as well you will be asked to sign a consent form and a copy of that will be kept by you. If you decide to take part you are still free to withdraw at any time and without giving a reason. You can take part in this study, by only filling in the questionnaires, if you do not wish to continue with an interview.

**What are the potential benefits of taking part?**

The findings of this research study may enlighten the Greek society regarding Greek women's needs associated with early detection of breast cancer and particularly mammography screening. They may also have relevance for health care professionals regarding their current communication with the Greek female population. Such an understanding could generally enhance health care approaches in the future, to promote cancer screening, adjusted to Greek women's individualized needs and



values, in order for them to make an informed decision towards mammography screening.

### **What are the potential risks?**

There are no risks or harm to you regarding the procedures this study involves.

### **Will my taking part in this study be kept confidential?**

I confirm that **CONFIDENTIALITY** will be maintained through the whole research procedures. If you would like to take part to the interview, confidentiality of your contacts details will be maintained through the whole research procedure. The completed questionnaires will be sent only to me or collected only by me and shared only with my supervisors. Confidentiality will be also maintained throughout the conduction and analysis of the interviews. The questionnaires and recorded interviews will be kept securely until the completion of the course, which is when they will be destroyed. All information which is collected about you during the course of the research will be kept on a password protected database and is strictly confidential. Any information about you which leaves the research unit will have your name and address removed so that you cannot be recognised from it. **ANONYMITY** will be maintained throughout any use of the results and possible publication of the findings, so you will not be identified.

### **What will happen to the results of the research study?**

The findings gathered from this study will be analysed, evaluated and further presented in my PhD thesis. This will be available in the Greenfield Medical Library of the University of Nottingham, towards the end of 2009-2010 and, hopefully, published in a professional nursing or medical journal.

### **Who is organizing and funding this research?**

This study constitutes a central component among a variety of PhD research studies on cancer and particularly breast cancer, at the Nursing school of the University of Nottingham in Great Britain. This study is not funded by any organization and I will fund all the expenses myself.

**Who has reviewed the study?**

This study has been reviewed and approved by the University of Nottingham Medical School Ethics Committee.

**Who to complain to?**

If you have any kind of complaints regarding the particular research study, please do not hesitate to initially contact the lead investigator of this study at the following address:

Professor Karen Cox  
Professor of Cancer and Palliative Care  
School of Nursing  
Queen's Medical Centre  
Nottingham  
NG7 2HA  
Tel: +44 (0)115 823 0819  
Fax: +44 (0)115 823 1208  
E-mail: [Karen.cox@nottingham.ac.uk](mailto:Karen.cox@nottingham.ac.uk)

If no satisfactory response is received from your contact to Professor Karen Cox, please do not hesitate to contact the secretary of the Ethics Committee at the following address :

Mrs Louise Sabir  
c/o Division of Therapeutics and MM, D Floor, South Block  
QMC Campus  
Nottingham University Hospitals Trust  
NG7 2UH

Please do not hesitate to contact me or my supervisor in the following address if you need more information concerning this study.

**Contact details:**

University of Nottingham, School of Nursing

Faculty of Medicine and Health Sciences

University of Nottingham, Medical School

Queen's Medical Centre

Nottingham NG7 2UH

E-mail address of Aikaterina Kaltsa: [ntxak2@nottingham.ac.uk](mailto:ntxak2@nottingham.ac.uk)

E-mail address of Professor Karen Cox : [Karen.cox@nottingham.ac.uk](mailto:Karen.cox@nottingham.ac.uk)

**You may keep this information sheet Thank you  
in anticipation of your valuable help**

Yours faithfully,  
Aikaterina Kaltsa

## **APPENDIX VI – Consent Form**





University of Nottingham, School of Nursing  
Faculty of Medicine and Health Sciences  
Faculty of Medicine and Health sciences  
University of Nottingham, Medical School  
Queen's Medical Centre  
Nottingham NG7 2UH

**Title of Project:** *Greek women's perceptions of mammography screening: An investigation of the factors which influence participation in screening for breast cancer.*

Name of Investigators: Aikaterina Kaltsa

*Healthy Volunteer's Consent Form*

Please read this form and sign it once the above named or their designated representative, has explained fully the aims and procedures of the study to you

- I voluntarily agree to take part in this study.
- I confirm that I have been given a full explanation by the above named and that I have read and understand the information sheet given to me which is attached.
- I have been given the opportunity to ask questions and discuss the study with one of the above investigators or their deputies on all aspects of the study and have understood the advice and information given as a result.
- I agree to the above investigators contacting my general practitioner [and teaching or university authority if appropriate] to make known my participation in the study where relevant.
- I authorise the investigators to disclose the results of my participation in the study but not my name.
- I understand that information about me recorded during the study will be kept in a secure database. If data is transferred to others it will be made anonymous. Data will be kept for 7 years after the results of this study have been published.
- I understand that I can ask for further instructions or explanations at any time.
- I understand that I am free to withdraw from the study at any time, without having to give a reason for withdrawing.

**Name:** .....

**Address:** .....

**Telephone number:** .....

**Signature:** ..... **Date:** .....

I confirm that I have fully explained the purpose of the study and what is involved to the Questionnaires' distribution and collection procedure, the aim of the interview conduction and the utilization and disposal of the findings.

I have given the above named a copy of this form together with the information sheet.

**Investigators Signature:** ..... **Name:** Aikaterina Kaltsa

**Study Volunteer Number:** .....

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